



PORTLAND HARBOR RI/FS
**ROUND 2 SUBYEARLING CHINOOK TISSUE
DATA REPORT**

DRAFT



March 31, 2006

Prepared for:
The Lower Willamette Group

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IC06-0008

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LIST OF ACRONYMS

Axys	Axys Analytical Services
CAS	Columbia Analytical Services
CLP	Contract Laboratory Program
COI	chemical of interest
EDD	electronic data deliverable
EES	Ellis Environmental Services
EPA	U.S. Environmental Protection Agency
EQuIS	Environmental Quality Information System
FSP	field sampling plan
FSR	field sampling report
LWG	Lower Willamette Group
NOAA	National Oceanic Atmospheric Administration
PAHs	polycyclic aromatic hydrocarbons
PARCC	precision, accuracy, representativeness, completeness, comparability
PCBs	polychlorinated biphenyls
PCDD/F	polychlorinated dibenzo- <i>p</i> -dioxin/furan
QA	quality assurance
QC	quality control
QAPP	quality assurance project plan
RI/FS	remedial investigation and feasibility study
RM	river mile
SCRA	site characterization and risk assessment
SOP	standard operating procedure
SVOCs	semivolatile organic compounds
SDG	sample delivery group

1.0 INTRODUCTION

The remedial investigation and feasibility study (RI/FS) of the Portland Harbor Superfund Site includes several rounds of field sampling activities to investigate the nature and extent of contamination in the in-water portion of the Site, to assess potential risk to human health and the environment, and to develop cleanup alternatives. Round 1 chemical and biological sampling took place during the summer and fall of 2002 and included extensive fish and shellfish tissue and some surface sediment collections. These results as well as the results of physical studies that continued into the winter of 2004 (e.g., the February 2004 bathymetry survey) are described in the Round 1 Site Characterization Summary Report (Integral 2004a).

Round 2 sampling activities included collection of the following types of data:

- Physical system survey data
- Surface and subsurface sediment chemistry and physical data
- Tissue chemistry data
- Benthic toxicity data
- Surface water chemistry data
- Groundwater, transition zone water, and seep water chemistry data
- Preliminary natural attenuation sampling (e.g., radioisotope cores)

Results from each of these collection efforts are documented under separate cover.

This Round 2 Subyearling Chinook Tissue Data Report summarizes the results from a May 10-12, 2005 sample collection effort designed to supplement the Round 1 chinook tissue data set. A detailed description of the Round 2 subyearling chinook tissue collection is included in the field sampling report (FSR; Integral and Windward 2005).

Except where noted in the FSR (Integral and Windward 2005), all Round 2 subyearling chinook tissue collection field activities, including navigational positioning, sample collection, sample handling and processing, and data management, followed guidelines specified in the Portland Harbor RI/FS Field Sampling Plan for Subyearling Chinook Tissue Collection (Chinook Tissue FSP; Integral 2005a), the Round 2 Quality Assurance Project Plan (QAPP; Integral and Windward 2004); the Round 2 Quality Assurance Project Plan Addendum 4: Subyearling Chinook Tissue Collection (Integral 2005b); the Round 2 Quality Assurance Project Plan Supplement to Addendum 4: Subyearling Chinook Tissue Collection – Semivolatile Organic Compounds (Integral 2005c); and the Round 2 Health and Safety Plan (Integral 2004b).

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1.1 ROUND 2 SAMPLING OBJECTIVES

The purpose of Round 2 sampling was to fill in data gaps for the RI and risk assessments as well as initiate data collection for the FS. This sampling effort was intended to supplement data related to potential exposure of juvenile chinook salmon (*Oncorhynchus tshawytscha*) to site-related contaminants. The objectives of this study were to:

- Determine the extent to which subyearling chinook salmon in the Portland Harbor area may accumulate chemicals of interest (COIs)
- Help estimate exposure of subyearling chinook by characterizing COI concentrations in stomach contents.

This data report presents and summarizes the results from the May 10-12, 2005 sampling event.

1.2 REPORT ORGANIZATION

The remaining sections of this document include a summary of the data collection activities (Section 2); details on the laboratory sample analyses, data quality reviews, and data management (Section 3); the chemical and taxonomic results (Section 4); and references (Section 5).

Supporting information is provided in the following three appendices:

- **Appendix A:** SCRA (site characterization and risk assessment) Database, Excel Flat File Format (on CD)
- **Appendix B:** Data Quality Summary
- **Appendix C:** Data Validation Reports (on CD only).

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2.0 DATA COLLECTION ACTIVITIES

This section summarizes the Round 2 subyearling chinook tissue collection activities during the May 10 through May 12, 2005 sampling event. Station navigation and positioning, record keeping, and sample handling and storage details are presented in the FSR (Integral and Windward 2005). Two site reconnaissance surveys were undertaken on April 11 and May 9, 2005, prior to initiation of the Round 2 subyearling chinook tissue collection, as described in the FSR (Integral and Windward 2005).

Round 2 subyearling chinook tissue collection and processing generally followed the procedures specified in the Chinook Tissue FSP (Integral 2005a) and associated QAPP and QAPP addenda (Integral and Windward 2004; Integral 2005b,c). Deviations from the FSP and QAPP are discussed in the FSR (Integral and Windward 2005) and summarized in Sections 2.3 and 3.5 in this data report.

In addition to the fish tissue samples collected by the Lower Willamette Group (LWG), National Oceanic and Atmospheric Administration (NOAA) collected fish at Stations T01 and T02 for stomach content analysis. NOAA performed the dissection and provided LWG with the stomach contents for analysis.

2.1 FISH SAMPLE COLLECTION

Subyearling chinook tissue samples were collected at four target locations in the Willamette River from river mile (RM) 2 to RM 18 (Figure 2-1). All stations identified in the FSP, including three stations within the study area and one station upriver from the initial study area, were sampled (Table 2-1). One station (T03) was occupied twice on subsequent days to collect enough fish to generate field replicates for chemical analyses (Table 2-2).

Fish sample collection was performed by Ellis Ecological Services (EES) using a 100-foot-long pole-seine for beach seining. The total number of fish collected was counted, and only target subyearling chinook salmon was sorted into buckets and then transferred to the fish-processing team. The processing team measured the fish fork lengths. Fish within the 50- and 80-mm target length were maintained alive in a large cooler filled with river water; all other fish were returned to the river.

The beach seining continued until 95 fish had been captured, to obtain three 30-fish composite sample replicates for chemical analyses, and at least five additional fish for taxonomical analyses of stomach contents. The live juvenile subyearling chinook were transported to the LWG's Portland field laboratory for further sample processing.

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A detailed description of the fish sample collection is provided in the FSR (Integral and Windward 2005).

2.2 FISH DISSECTION AND SAMPLE PROCESSING

Dissection of the fish was conducted under the supervision of Dr. Robert Ellis (EES), an experienced fisheries biologist. In the field laboratory, each juvenile subyearling fish was measured and weighed using standard clean procedures (EPA 2000).

Once weighed, the internal organs were removed and the stomach was carefully separated from the other organs in a stainless-steel pan. The stomach contents were then recorded, scraped out, weighed, and composite samples were frozen and stored at -20°C until analyzed. The remaining organs and the stomach tissue (i.e., empty, scraped out stomach) were returned to the body cavity and included in the whole-body chemistry analysis.

At Stations T01, T02, and T04 more than 90 fish were collected, and each of the three replicates consisted of 30 fish. At Station T03, only 72 fish were collected. These fish were processed in the laboratory as they arrived from the field under the assumption that 90 fish would be collected. At the end of the field effort, the 72 fish were redistributed among the three replicates so that the whole-body weight in each replicate was close to 60 grams. The number of fish per replicate was 24, 21, and 27, respectively. Once packaged, the whole-body fish samples were frozen and stored at -20°C until homogenized and analyzed.

Taxonomic identification of prey items in the stomach contents was performed on randomly selected fish from the three stations where more than 90 fish were collected. Length measurements were performed on the fish as above, the fish were weighed, and the information was recorded. The stomach contents were scraped out, placed in a glass vial, and preserved. NOAA collected additional fish from Stations T01 and T02, performed the fish dissection, and provided LWG with the stomach content samples for analysis.

A detailed description of the fish dissection and sample processing is provided in the FSR (Integral and Windward 2005).

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3.0 LABORATORY ANALYSIS AND DATA MANAGEMENT

This section describes the laboratory methods used to analyze the fish tissue samples. Any deviations from the analytical methods detailed in the QAPP are described below. The data management subsection describes the data validation process from receipt of the laboratory data package to the generation of a final validated electronic data deliverable (EDD). Furthermore, it describes how the SCRA database was compiled into a series of compatible Excel tables, which were then distributed to the SCRA data users. The data validation reports are provided as Appendix C.

3.1 CHEMICAL AND TAXONOMICAL ANALYSES

The following subsections describe the analyses conducted and the laboratories responsible for the analyses.

3.1.1 Fish Tissue Samples

Two laboratories conducted the chemical analyses of subyearling chinook tissue samples. Columbia Analytical Services (CAS; Kelso, Washington) conducted the sample homogenization and the analyses for percent lipids, percent moisture, total metals, butyltin compounds, organochlorine pesticides, and SVOCs in whole-body tissue. Axys Analytical Services, Ltd. (Axys; Sydney, B.C., Canada) performed the sample homogenization of the stomach content samples and conducted the analyses for dioxins and furans and PCB congeners (full list of 209 congeners) in whole-body tissue, and organochlorine pesticides, PCB congeners, and PAHs in stomach contents. Laboratory methods for whole-body and stomach content samples are summarized in Table 3-1.

3.1.2 Taxonomical Analysis

EcoAnalysts Inc (Moscow, Idaho) performed taxonomical identification of 20 fish stomach samples collected at sampling Stations T01, T02, and T04. The number of fish stomach samples per station was as follows: six samples at Station T01, eight samples at Station T02, and six samples at Station T04.

3.2 DATA VALIDATION

As required by the Round 2 QAPP (Integral and Windward 2004), approximately 10% of the subyearling chinook tissue data were fully validated, and the remaining data were subjected to Level 3 data validation, which includes the evaluation and assessment of the sample results and applicable quality control results reported by the laboratory. The data validation subcontractor for the Round 2 subyearling chinook tissue data was EcoChem, Inc. (EcoChem) located in Seattle, WA. The

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first data package for each analytical method was additionally submitted to the U.S Environmental Protection Agency (EPA) for data validation by EPA's QA Office.

The inorganic, organic, PCB congener, and polychlorinated dibenzo-*p*-dioxin/furan (PCDD/F) data were validated in accordance with guidance specified by the *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic and Organic Data Review*, by EPA Region 10 standard operating procedures (SOPs) for validation of PCB congener data and PCDD/F data (EPA 1994, 1995, 1996, 1999), and by *Guidance on Environmental Data Verification and Validation* (EPA 2002). Modifications were made to the Functional Guidelines to accommodate quality assurance/quality control (QA/QC) requirements of the non-Contract Laboratory Program (CLP) methods that were used for this project. Data qualifiers were assigned during data validation if applicable control limits were not met, in accordance with the EPA data validation guidelines and the quality control requirements included in the referenced methods. The data validation qualifiers and definitions are summarized in Table 3-2.

The following laboratory deliverables were reviewed during Level 3 and full data validation:

- The case narrative discussing analytical problems (if any) and procedures.
- Chain-of-custody documentation and laboratory sample receipt logs.
- Instrument calibration results.
- Method blank results.
- Results for laboratory quality control samples required by the referenced method, including laboratory control sample/laboratory control sample duplicate analyses, matrix spike/matrix spike duplicate analyses, surrogate recoveries, and other method specific quality control samples (e.g., serial dilutions for inductively coupled plasma analyses).
- Results for field quality control samples (i.e., equipment blanks, field duplicates, and field split samples).
- Analytical results for the surface water samples.
- For data packages subjected to full validation, in addition to review and assessment of the documentation identified above, the validation included verification of reported concentrations for the field and QC samples, verification of intermediate transcriptions, and review of instrument data such as mass spectra to verify analyte identification procedures.

After completing the data validation activities for each subyearling chinook tissue sample type, a data quality report and a tabular summary of qualified data were generated by EcoChem. The EcoChem data quality reports are included in Appendix B. EcoChem chemists added data validation qualifiers that were

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assigned during validation to the laboratory report forms and to the laboratory EDDs. The revised EDDs and the hard-copy data validation reports were submitted as the project deliverable. The revised EDDs were then incorporated into the project database, as described in Section 3.5.

3.3 DATA QUALITY AND USABILITY

Data generated in the field and at the laboratories were verified and validated according to the criteria and procedures described in the Round 2 QAPP Addendum 4 (Integral 2005c). Data quality and usability were evaluated based on the results of the data validation and the data quality objectives for the Round 2 data. The performance criteria in the QAPP included project analytical goals for precision, accuracy, representativeness, completeness, and comparability (PARCC) of the Round 2 data.

The precision, accuracy, representativeness, and comparability of the data were assessed during data validation, as described in the Round 2 QAPP. Completeness is calculated by comparing the total number of acceptable data (nonrejected data) to the total number of data points generated. Completeness for the Round 2 subyearling chinook tissue chemistry data was greater than 99% overall, which exceeds the QAPP completeness objective of 95%. Completeness for the Round 2 data is summarized by parameter group in Table 3-3. Completeness ranged from 94 to 100% for the various parameter groups.

The Ecochem validation report (Appendix A) provides detailed information on the data quality issues and data validation qualifiers for each parameter group for each laboratory data package. Qualified chemistry data for stomach content and fish tissue samples are included in Table 4-1. A complete list of qualified results with reason codes is provided in the data validation reports in Appendix C.

3.3.1 Field Quality Control Samples

Quality control samples were prepared in the field and at the laboratories to monitor the bias and precision of the sample collection and analysis procedures. Field QC samples for this study were limited to one rinsate blank for fish dissection equipment (Table 3-4). Field replication was incorporated into the sampling design. Field splits were not collected because of fish catch limits.

It should be noted that at Station T03, only 72 fish were collected. These fish were processed in the laboratory as they arrived from the field under the assumption that 90 fish would be collected. At the end of the field effort, the 72 fish were redistributed among the three replicates so that the whole-body weight in each replicate was close to 60 grams. The number of fish per replicate was 24, 21, and 27, respectively (see Table 3-3 in Integral and Windward 2005).

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3.3.2 Summary of Qualified Data

Selected data not meeting the data quality criteria were qualified as undetected, estimated, tentatively identified, or rejected during validation, in accordance with the QAPP. A tabular summary of the results, with the data qualifiers, is included in Table 4-1. A complete list of qualified results with reason codes is provided in Appendix A (on CD). Data qualified as undetected are usable for all intended purposes. Data qualified as estimated or tentatively identified are usable for all intended purposes, with the knowledge that these data may be less precise or less accurate than unqualified data. Rejected data are not usable for any purpose. Concentrations associated with rejected data have been removed from the database, and an “R” qualifier is retained to flag the results that were removed.

3.4 DATA MANAGEMENT

Once the laboratories completed their internal QA/QC checks, they exported the analytical data (sample, test, batch, and result information) into comma-delimited text files with data columns arranged in an order that was recognized by the project’s Environmental Quality Information System (EQuIS) database. These EDDs were e-mailed to Integral where they were checked for proper EQuIS structure and appended with specific information that was unknown by the labs, such as sampling location, composite information, and field replicate and split information. If any problems were found in the structure of the EDDs, then the laboratory was notified and asked to correct the problem and resubmit the EDD. Each emailed EDD transmission, with the original, unaltered EDD attachment, was stored to document and track the laboratories’ delivery of electronic data to Integral.

When the EDD was corrected and complete, they were checked electronically by loading them into the temporary section of Integral’s Lower Willamette Group (LWG) project database. In the process of loading, EQuIS checked the EDDs for correct lookup codes (such as for analytes, test methods, and sample matrices); proper relationships for results, tests, batches, and samples (to ensure all results matched with a test, tests with samples, and sample/test pairs with batches); and that all derived samples (such as replicates, splits, and matrix spikes) had corresponding parent samples.

In addition to these checks, EQuIS also checked “less important” characteristics, such as date and time formats and text field lengths, to ensure consistency throughout the database. Any error prevents the EDD from loading until the error is corrected. If errors were found that were related to the way the laboratory reported the data or constructed the EDD, then the laboratory was notified and asked to correct the problem and resubmit the EDD. If errors were related to Excel automatically formatting date and time fields, for example, then the error was corrected and steps were taken to avoid repeats of the problem (such as changing

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default settings in the software). Successfully loaded EDDs were saved to document and track the data that were loaded into Integral's LWG project database.

Each verified and accurate EDD was provided to the Round 2 data validation contractor (EcoChem, Seattle, WA) for data review and validation. These EDDs were also stored in a temporary section of the project database, where they could be queried and examined, if desired, until validation was complete. As EcoChem completed validation of the data by sample delivery group (SDG) or small groups of SDGs, the validator qualifiers and reason codes were applied to the data in the temporary section of the database. The validated data were then merged into the permanent project database. During the merging process, all previously performed electronic checks were repeated to ensure nothing was incorrectly modified with the application of the validation results.

Several queries were set up in the permanent project database to translate the data structure to a form compatible with NOAA's Query Manager. The data translation included creating station and sample identifiers, converting the sample type code, and changing the date format. The translated data were imported into an Access file provided by NOAA that contained template tables for the Query Manager structure.

Integral's LWG project database contains all of the data reported by the analytical laboratories. This includes field and lab replicates, lab dilutions, results for the same analyte from multiple analytical methods (SW8270 and SW8270-SIM, for example), and laboratory QA samples such as matrix spikes, surrogates, and method blanks. The data handling rules described in *Guidelines for Data Averaging and Treatment of Non-detected Values for the Round 1 Database* (Kennedy Jenks et al. 2004) were used to create a data set for the SCRA data users that was simpler: the data set contained only one result per analyte per sample and excluded all of the laboratory QA results. This involved creating a SCRA database that excluded lab QA results, contained only the most appropriate dilution result and analytical method for each analyte, and contained the average of replicates. Excluding the lab QA results was a simple database querying step. Selection of the most appropriate dilution was either done by the reporting laboratory or by the data validator. Selection of the most appropriate analytical method was described in the guidelines document and was accomplished by flagging the appropriate method in the project database.

The guidelines document described the rules used for averaging data and carrying qualifiers. Because it was the most data manipulation intensive procedure, the data were divided into subgroups and approximately 40% of each subgroup was verified. If any problems were found with the averaging, then the 100% of the subgroup was verified and problems were corrected. The preliminary SCRA database was compiled into a series of database-compatible Excel tables and distributed to the SCRA data users.

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3.5 LABORATORY DEVIATIONS FROM THE QAPP

This section discusses laboratory deviations from the Round 2 QAPP (Integral and Windward 2004) and addenda (Integral 2005b,c). Deviations from the Chinook Tissue FSP (Integral 2005a) were included in the FSR (Integral and Windward 2005).

Samples were analyzed as described in the Round 2 QAPP (Integral and Windward 2004) and addenda (Integral 2005b,c). For selected whole-body samples, the total homogenized mass was less than 50 grams. Subsamples for chemical analysis were generated in order of priority defined in the Chinook Tissue FSP (Integral 2005a) and QAPP (Integral 2005b,c), in consultation with EPA. Selected samples were not analyzed for a parameter group, or were analyzed with a smaller subsample than the aliquot specified in the QAPP Addendum 4, which resulted in elevated detection limits for these results. The parameter groups that had elevated detection limits or were not analyzed due to limited tissue sample mass are identified in Appendix B, Table B-8.

4.0 ROUND 2 RESULTS

Round 2 results for chinook tissue chemistry and taxonomic analysis are provided in this section.

4.1 SUMMARY OF CHEMISTRY RESULTS

Chinook tissue samples were collected at four locations (see Figure 2-1) during the May 10-12, 2005, sampling event. Table 4-1 summarizes all the results for chemical analyses of stomach content and whole-body tissue samples collected.

4.2 SUMMARY OF TAXONOMIC RESULTS

Table 4-2 summarizes the results for taxonomical analyses of 20 fish stomach samples collected at the three sampling stations T01, T02, and T04 (see Figure 2-1). A total of 36 prey organisms were identified in the 20 subyearling chinook stomachs. The most commonly identified prey organisms belonged to six taxonomical groups. Cladocera (daphnids) accounted for 57.5% of all prey organisms identified in the stomachs. The high percentage was to a large extent driven by one juvenile chinook having eaten 358 daphnids out of 906 identified prey organisms. Daphnids were found in 30% of the 20 stomachs. Chironomids (blood worms) were identified in 60% of the stomachs and accounted for 8.9% of all identified organisms. The other four commonly identified organisms included Coleoptera (beetles, 12.6% of all identified organisms), Nematocera (long-horned flies, 5.1% of all identified organisms), and Psocoptera (wood lice, 2.8% of all

identified organisms). The developmental stages of the insects identified in all stomach contents samples were 73% larvae, 2% pupae, and 25% adults.

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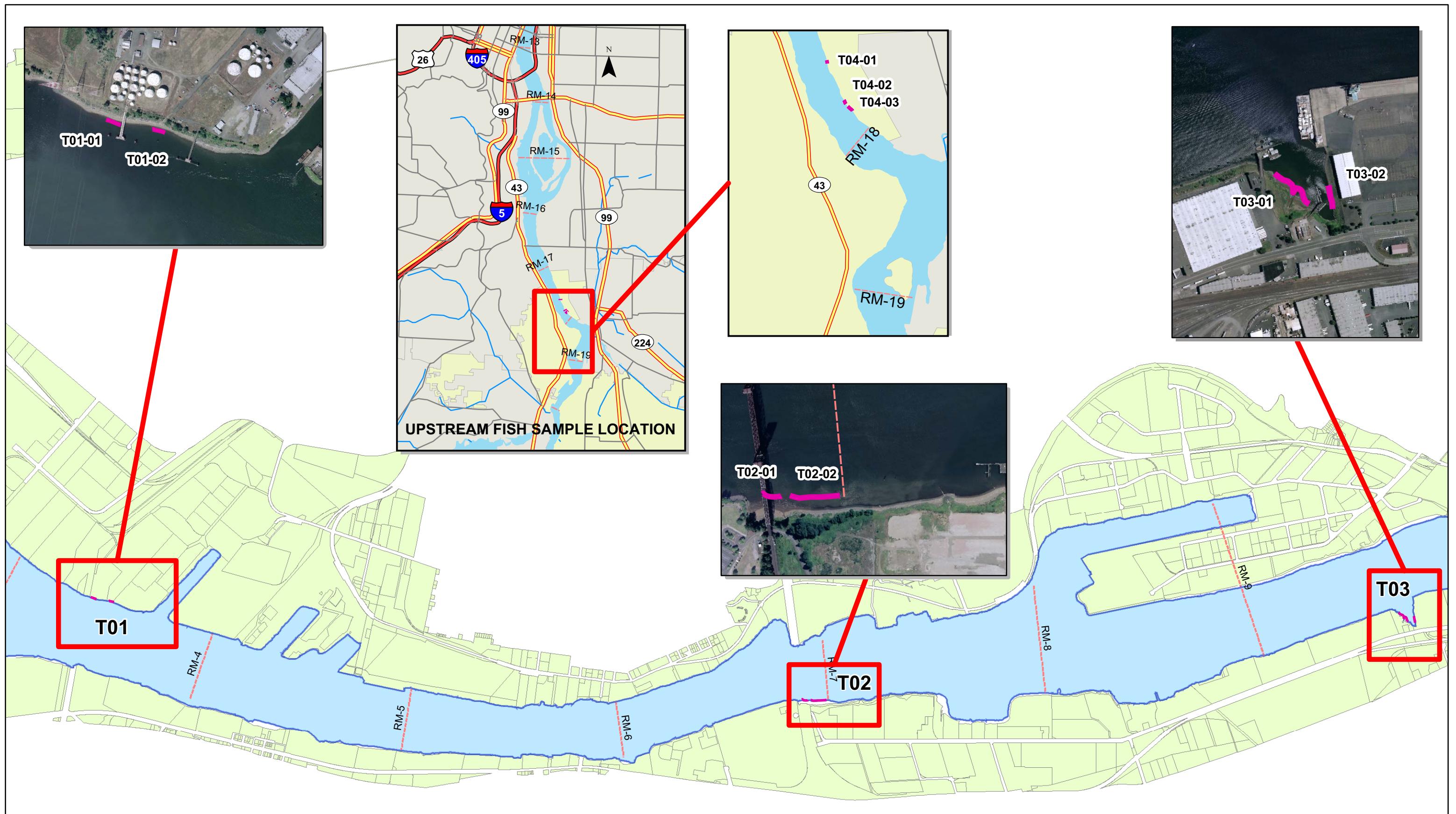


Figure 2-1
Portland Harbor RI/FS
Round 2 Subyearling Chinook Tissue Data Report
Subyearling Chinook Tissue Collection Sample Locations

Table 2-1. Subyearling Chinook Tissue Sampling Stations and Sampling Methods.

Station ID¹	River Mile	Sampling Station Description	Beach Seine
LW2-T01	Mile 3-4	Downstream Study Area-East Bank	X
LW2-T02	Mile 6-7	Midstream Study Area-West Bank	X
LW2-T03	Mile 9-10	Upstream Study Area-West Bank	X
LW2-T04*	Mile 17-18	Upriver Reference- East Bank	X

Notes:

¹ Field replicates were collected at all stations.

* Actual sampling station is 1,684 m downstream of target station.

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Table 2-2. Subyearling Chinook Tissue Samples Collected, Dates Sampled, and Analyses Conducted.¹

		Stomach Contents				Whole Body								
Date Sampled	Sample ID	PAHs	PCB Congeners (full 209)	Organochlorine Pesticides	Taxonomy	Percent Lipids	Percent Moisture	Total Metals	Butyltin Compounds	Organochlorine Pesticides	PAHs	SVOCs	Dioxin Furans	PCB Congeners (full 209)
5/10/05	LW2-T01-SCW-1					X	X	X	X	X	X	X	X	X
5/10/05	LW2-T01-SCW-2					X	X	X	X	X	X	X	X	X
5/10/05	LW2-T01-SCW-3					X	X	X	X	X	X	X	X	X
5/10/05	LW2-T01-SCG	X	X	X	X									
5/10/05	LW2-T02-SCW-1					X	X	X	IS ²	X	X	IS ²	X	X
5/10/05	LW2-T02-SCW-2					X	X	X	X	X	X	IS ²	X	X
5/10/05	LW2-T02-SCW-3					X	X	X	X	X	X	IS ²	X	X
5/10/05	LW2-T02-SCG	X	X	X	X									
5/11-12/05	LW2-T03-SCW-1					X	X	X	X	X	X	X	X	X
5/11-12/05	LW2-T03-SCW-2					X	X	X	X	X	X	IS ²	X	X
5/11-12/05	LW2-T03-SCW-3					X	X	X	X	X	X	X	X	X
5/11-12/05	LW2-T03-SCG	X	X	X	X									
5/12/05	LW2-T04-SCW-1					X	X	X	X	X	X	X	X	X
5/12/05	LW2-T04-SCW-2					X	X	X	X	X	X	X	X	X
5/12/05	LW2-T04-SCW-3					X	X	X	X	X	X	X	X	X
5/12/05	LW2-T04-SCG	X	X	X	X									
5/12/05	LW2-T901*							X	X	X	X	X	X	X
5/14/05	LW2-T01-NOAA SC	X	X	X										
5/14/05	LW2-T02-NOAA SC	X	X	X										

Notes:¹ Field samples were collected in triplicates at all stations.

* Field lab dissecting tools and tray rinsate.

² Insufficient Sample - Analysis not conducted because limited sample mass available.**DO NOT QUOTE OR CITE:**

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Table 3-1. Laboratory Methods for Fish Tissue Samples.

Analysis	Laboratory	Sample Preparation		Quantitative Analysis	
		Protocol	Procedure	Protocol	Procedure
Organochlorine Pesticides¹ (Whole-body samples)	CAS	EPA 3540C EPA 3640A EPA 3620B	Soxhlet extraction Gel permeation chromatography Florisil® cleanup	EPA 8081A	GC/ECD
Lipids (Whole-body samples)	CAS	EPA 3540C ¹	Soxhlet extraction	CAS SOP	Balance
Butyltin Compounds (Whole-body samples)	CAS	Krone et al. 1988 Krone et al. 1988	Solvent extraction Derivatization	Krone et al. 1988	GC/FPD
Polycyclic Aromatic Hydrocarbons (Whole-body samples)	CAS	EPA 3540C EPA 3640A EPA 3620B	Soxhlet extraction Gel permeation chromatography Florisil® cleanup	EPA 8270C SIM	GC/MS SIM
Semivolatile Organic Compounds (Whole-body samples)	CAS	EPA 3540C EPA 3640A	Soxhlet extraction Gel permeation chromatography	EPA 8270C SIM	GC/MS SIM
Metals (Whole-body samples) Aluminum, antimony, arsenic, cadmium, copper, lead, nickel, silver, zinc	CAS	EPA 3050B/PSEP	Acid digestion	EPA 6020	ICP/MS
Chromium		EPA 3050B/PSEP	Acid digestion	EPA 6010B	ICP/AES
Selenium		EPA 3050B/PSEP	Acid digestion	EPA 7742	AAS
Mercury		EPA 7742 EPA 7470	Hydride generation Acid digestion/oxidation	EPA 7471A	CVAA
Chlorinated Dioxins and Furans (Whole-body samples)	Axys	EPA 1613B	Soxhlet extraction Gel permeation chromatography Layered Acid/Base SiO ₃ column 1% deactivated basic Alumina Carbon celite	EPA 1613B	HRGC/HRMS

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Table 3-1. Laboratory Methods for Fish Tissue Samples.

Analysis	Laboratory	Sample Preparation		Quantitative Analysis	
		Protocol	Procedure	Protocol	Procedure
PCB Congeners (Whole-body samples and stomach content samples)	Axys	EPA 1668A	Soxhlet extraction Acid silica gel Layered Acid/Base silica gel 1% deactivated basic Alumina Florisil® cleanup	EPA 1668A	HRGC/HRMS
Organochlorine Pesticides¹ (Stomach content samples)	Axys	EPA 3540C EPA 3640A EPA 3620B	Soxhlet extraction Gel permeation chromatography Florisil® cleanup	Axys SOP	HRGC/HRMS
Polycyclic Aromatic Hydrocarbons (Stomach content samples)	Axys	EPA 3540C EPA 3640A EPA 3630C	Soxhlet extraction Gel permeation chromatography Silica gel cleanup	Axys SOP	HRGC/HRMS

Notes:

¹ A portion of the pesticide extract will be used for lipids determination.

AAS - Atomic absorption spectrometry

CAS - Columbia Analytical Services

CVAA - cold vapor atomic absorption

EPA - U.S. Environmental Protection Agency

GC/ECD - gas chromatography/electron capture detection

GC/FPD - gas chromatography/flame photometric detection

GC/MS - gas chromatography/mass spectrometry

HRGC/HRMS - high resolution gas chromatography/high resolution mass spectrometry

ICP/AES - inductively coupled plasma/atomic emission spectrometry

ICP/MS - inductively coupled plasma - mass spectrometry

PSEP - Puget Sound Estuary Program

SIM - selected ion monitoring

SOP - standard operating procedure

Table 3-2. Data Validation Qualifiers and Definitions.

Data Qualifier	Definition
U	The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.
J	The associated numerical value is an estimated quantity.
NJ	Presumptive evidence of the presence of the material at an estimated quantity.
UJ	The material was analyzed for, but was not detected. The sample quantitation limit is an estimated quantity.
T	Value is an average or a selected value (see Kennedy Jenks et al. 2004).

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LWG

Lower Willamette Group

Portland Harbor RI/FS
Round 2 Subyearling Chinook Tissue
Data Report
March 31, 2006
DRAFT

Table 3-3. Percent Completeness by Parameter Group.

Analysis	Total # of Data Points ¹	Number of Data Points		Completeness (%)
		Accepted	Rejected	
PCB Aroclors	126	126	0	100
Butyltins	44	44	0	100
Conventionals ²	24	24	0	100
PCB Congeners	2880	2880	0	100
PCB Homologs	162	162	0	100
Dioxin/furan homologs	120	120	0	100
Dioxin/furans	181	181	0	100
Metals	144	144	0	100
PAHs	306	306	0	100
Pesticides	480	480	0	100
Phenols	40	40	0	100
Phthalates	48	48	0	100
SVOCs	120	120	0	100
Round 2 Chinook Tissue Sampling Project Total	4675	4675	0	100

Notes:

¹ Totals include field replicates and split samples and exclude field blanks.

² Includes Lipids and TS.

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Table 3-4. Summary of Field QC Samples for Subyearling Chinook Tissue Collection Event.

Parameter	Samples ^{1,2}	Field Rinsate Blanks ³	Total Number of Samples
Whole Body			
Percent Lipids	12		12
Percent Moisture	12		12
Total Metals	12	1	13
Butyltin Compounds	12	1	13
Organochlorine Pesticides	12	1	13
PAHs	12	1	13
SVOCs	12	1	13
Dioxins/Furans	12	1	13
PCB Congeners (all 209)	12	1	13
Stomach Contents⁴			
PAHs	5		5
PCB Congeners (all 209)	5		5
Organochlorine Pesticides	5		5
Taxonomy	20		20

Notes:

¹ Field QC samples are included in the three sample replicates per station and counted as total sample numbers.

² Field split samples were not collected because of fish catch limits.

³ A field rinsate blank was collected at the end of the sampling event for all dissecting equipment.

⁴ Includes two samples collected by NOAA at T01 and T02 for stomach content analysis.

Table 4-1. Analytical Results for Stomach Content and Fish Tissue Samples.

Analysis/Analyte	CAS #		Sample ID Sample Date/Time	LW2-T01 SC 5/10/05 13:30	LW2-T01-NOAA SC 5/14/05 17:40	LW2-T01-REP1 5/10/05 13:30	LW2-T01-REP2 5/10/05 14:30	LW2-T01-REP3 5/10/05 16:15	LW2-T02 SC 5/10/05 18:00
			X Coordinate Y Coordinate Units	7617314.805 718525.7315	7617314.805 718525.7315	7617314.805 718525.7315	7617314.805 718525.7315	7617314.805 718525.7315	7626519.107 703755.7939
Conventional									
Total solids	TSO	percent	--	--	18	19.5	18.7	--	
Lipids	66455-18-3	percent	--	--	1.5	1.5	1.6	--	
Metals									
Aluminum, total	7429-90-5	mg/kg	--	--	5.418	JT	3.705	3.3286	--
Antimony, total	7440-36-0	mg/kg	--	--	0.00144	UT	0.00429	U	0.00187
Arsenic, total	7440-38-2	mg/kg	--	--	0.0522	T	0.0624	0.04862	--
Cadmium, total	7440-43-9	mg/kg	--	--	0.01017	T	0.01248	0.011033	--
Chromium, total	7440-47-3	mg/kg	--	--	0.054	UT	0.0585	U	0.0561
Copper, total	7440-50-8	mg/kg	--	--	1.1178	T	0.87165	1.07151	--
Lead, total	7439-92-1	mg/kg	--	--	0.0288	UT	0.02535	U	0.02618
Mercury, total	7439-97-6	mg/kg	--	--	0.01134	J	0.01014	J	0.011407
Nickel, total	7440-02-0	mg/kg	--	--	0.3078	T	0.2574	0.30668	--
Selenium, total	7782-49-2	mg/kg	--	--	0.072	JT	0.1755	0.1496	--
Silver, total	7440-22-4	mg/kg	--	--	0.00234	UT	0.002925	U	0.002992
Zinc, total	7440-66-6	mg/kg	--	--	27.9	T	25.935	27.676	--
Butyltins									
Butyltin ion	78763-54-9	ug/kg	--	--	1	U	1	U	0.98
Dibutyltin ion	14488-53-0	ug/kg	--	--	1.1	U	0.85	U	0.77
Tributyltin ion	36643-28-4	ug/kg	--	--	2.7	U	2.1	J	1.9
Tetrabutyltin	1461-25-2	ug/kg	--	--	0.17	U	0.15	U	0.16
PAHs									
2-Methylnaphthalene	91-57-6	ug/kg	14.2	U	15.6	U	4.5	6.9	5.8
Acenaphthene	83-32-9	ug/kg	12.3	J	7.35	J	0.87	1	0.93
Acenaphthylene	208-96-8	ug/kg	2	J	1.24	U	0.22	J	0.3
Anthracene	120-12-7	ug/kg	7.52	J	6.32	J	0.25	J	0.45
Fluorene	86-73-7	ug/kg	16.1	J	8.15	J	0.74	0.65	0.75
Naphthalene	91-20-3	ug/kg	29.3	U	38	U	2.9	U	5.1
Phenanthrene	85-01-8	ug/kg	103	J	46.6	J	1.8	1.5	1.9
Dibenz(a,h)anthracene	53-70-3	ug/kg	0.93	U	0.57	U	0.12	U	0.19
Benz(a)anthracene	56-55-3	ug/kg	6.6	J	7.67	J	0.13	U	0.13
Benzo(a)pyrene	50-32-8	ug/kg	2.26	J	3.31	U	0.13	U	0.13
Benzo(b)fluoranthene	205-99-2	ug/kg	--	J	--	J	0.26	J	0.18
Benzo(g,h,i)perylene	191-24-2	ug/kg	6.04	J	4.01	U	0.18	U	0.18
Benzo(k)fluoranthene	207-08-9	ug/kg	7.12	J	5.2	J	0.14	U	0.33
Benzo(b+j)fluoranthene	BBJFLANTH	ug/kg	18	J	9.35	J	--	--	--
Chrysene	218-01-9	ug/kg	42.4	J	22.2	J	0.2	U	0.94
Fluoranthene	206-44-0	ug/kg	109	J	49.4	J	0.97	U	1.5
Indeno(1,2,3-cd)pyrene	193-39-5	ug/kg	5	J	3.91	U	0.17	U	0.17
Pyrene	129-00-0	ug/kg	64.3	J	33.7	J	0.35	J	0.41
Low Molecular Weight PAH	LPAH	ug/kg	141	JT	68.4	JT	8.38	JT	16.1
High Molecular Weight PAH	HPAH	ug/kg	261	JT	128	JT	1.58	JT	1.85
Total PAHs	130498-29-2	ug/kg	402	JT	196	JT	9.96	JT	17.9
									10
									JT
									72.3
									JT
									200
									JT
									272
									JT

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Table 4-1. Analytical Results for Stomach Content and Fish Tissue Samples.

Analysis/Analyte	CAS #		Sample ID Sample Date/Time	LW2-T01 SC 5/10/05 13:30	LW2-T01-NOAA SC 5/14/05 17:40	LW2-T01-REP1 5/10/05 13:30	LW2-T01-REP2 5/10/05 14:30	LW2-T01-REP3 5/10/05 16:15	LW2-T02 SC 5/10/05 18:00	
			X Coordinate Y Coordinate Units	7617314.805 718525.7315	7617314.805 718525.7315	7617314.805 718525.7315	7617314.805 718525.7315	7617314.805 718525.7315	7626519.107 703755.7939	
SVOCs										
1,2,4-Trichlorobenzene	120-82-1	ug/kg	--	--	20	U	19	U	21	U
1,2-Dichlorobenzene	95-50-1	ug/kg	--	--	24	U	23	U	25	U
1,3-Dichlorobenzene	541-73-1	ug/kg	--	--	22	UJ	21	UJ	23	UJ
1,4-Dichlorobenzene	106-46-7	ug/kg	--	--	22	UJ	21	UJ	23	UJ
Benzyl alcohol	100-51-6	ug/kg	--	--	56	J	55	J	77	J
Dibenzofuran	132-64-9	ug/kg	--	--	0.85		0.88		0.9	
Hexachlorobenzene	118-74-1	ug/kg	1.07	0.613	0.62	J	0.81	J	0.7	J
Hexachlorobutadiene	87-68-3	ug/kg	0.0302	U	0.0412	J	1.1	U	1.1	U
Hexachloroethane	67-72-1	ug/kg	--	--	17	U	17	U	18	U
N-Nitrosodiphenylamine	86-30-6	ug/kg	--	--	19	U	19	U	20	U
Phenols										
2,4-Dimethylphenol	105-67-9	ug/kg	--	--	26	U	25	U	27	U
2-Methylphenol	95-48-7	ug/kg	--	--	110	U	110	U	110	U
4-Methylphenol	106-44-5	ug/kg	--	--	29	U	29	U	31	U
Pentachlorophenol	87-86-5	ug/kg	--	--	400	J	60	U	64	U
Phenol	108-95-2	ug/kg	--	--	38	J	33	U	35	U
Phthalates										
Dimethyl phthalate	131-11-3	ug/kg	--	--	9.9	U	9.8	U	11	U
Diethyl phthalate	84-66-2	ug/kg	--	--	19	U	18	U	20	U
Diethyl phthalate	84-74-2	ug/kg	--	--	31	U	33	J	48	J
Butylbenzyl phthalate	85-68-7	ug/kg	--	--	220		190		190	
Di-n-octyl phthalate	117-84-0	ug/kg	--	--	26	U	25	U	27	U
Bis(2-ethylhexyl) phthalate	117-81-7	ug/kg	--	--	110	U	110	U	110	U
Pesticides										
2,4'-DDD	53-19-0	ug/kg	0.228	J	0.419	NJ	4.2		1.1	U
2,4'-DDE	3424-82-6	ug/kg	0.0542	J	0.0713	NJ	0.16	U	0.16	U
2,4'-DDT	789-02-6	ug/kg	0.21	J	0.208	J	4.4	U	2.9	NJ
4,4'-DDD	72-54-8	ug/kg	2.04		2.01	NJ	1	J	1.9	
4,4'-DDE	72-55-9	ug/kg	9.16		4.96	NJ	8.7		9.1	
4,4'-DDT	50-29-3	ug/kg	0.969		1.29	J	18		5.4	
Total of 4,4'-DDD, -DDE, -DDT	PP_DDT3ISO	ug/kg	12.2	T	8.26	JT	27.7	JT	16.4	T
Aldrin	309-00-2	ug/kg	0.00911	U	0.0355	U	0.45	U	0.16	U
alpha-Hexachlorocyclohexane	319-84-6	ug/kg	0.0317	J	0.0322	J	0.34	U	0.34	U
beta-Hexachlorocyclohexane	319-85-7	ug/kg	0.029	U	0.0598	U	1.1	U	1.1	U
delta-Hexachlorocyclohexane	319-86-8	ug/kg	0.0024	U	0.0072	U	0.23	U	0.23	U
gamma-Hexachlorocyclohexane	58-89-9	ug/kg	0.0252	U	0.0435	U	0.18	U	0.18	U
cis-Chlordane	5103-71-9	ug/kg	0.183	J	0.309	J	0.12	U	0.12	U
trans-Chlordane	5103-74-2	ug/kg	0.126	J	0.262	J	2.1	U	1.8	U
Oxychlordane	27304-13-8	ug/kg	0.379	U	0.172	J	0.42	U	0.41	U
cis-Nonachlor	5103-73-1	ug/kg	0.124	J	0.137	J	17	U	0.27	U
trans-Nonachlor	39765-80-5	ug/kg	0.647		0.452	J	0.7	J	1.2	J

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Table 4-1. Analytical Results for Stomach Content and Fish Tissue Samples.

Analysis/Analyte	CAS #	Sample ID Sample Date/Time	LW2-T01 SC	LW2-T01-NOAA SC	LW2-T01-REP1	LW2-T01-REP2	LW2-T01-REP3	LW2-T02 SC					
			X Coordinate	Y Coordinate	5/10/05 13:30 7617314.805 718525.7315	5/14/05 17:40 7617314.805 718525.7315	5/10/05 13:30 7617314.805 718525.7315	5/10/05 14:30 7617314.805 718525.7315	5/10/05 16:15 7617314.805 718525.7315	5/10/05 18:00 7626519.107 703755.7939			
Dieldrin	60-57-1	ug/kg	0.471	J	0.637	J	1.1	U	0.23	J	0.22	U	2.92
alpha-Endosulfan	959-98-8	ug/kg	0.23	U	0.533	U	0.22	NJ	0.18	U	0.18	U	0.49
beta-Endosulfan	33213-65-9	ug/kg	0.224	U	0.52	U	1	U	1.1	U	0.82	U	0.439
Endosulfan sulfate	1031-07-8	ug/kg	0.414	J	0.782	U	0.21	UJ	0.2	UJ	0.2	UJ	0.68
Endrin	72-20-8	ug/kg	0.0066	U	0.0172	J	1.1	U	0.084	U	0.076	U	0.212
Endrin aldehyde	7421-93-4	ug/kg	0.0405	U	0.0166	U	3.5	U	1.1	U	1.1	U	0.0769
Endrin ketone	53494-70-5	ug/kg	0.0043	U	0.0095	U	3	U	0.43	U	0.41	U	0.0854
Heptachlor	76-44-8	ug/kg	0.00825	U	0.0128	U	0.33	U	0.43	U	0.39	J	0.293
Heptachlor epoxide	1024-57-3	ug/kg	0.0666	J	0.071	J	2.1	NJ	1.3		1.4	J	0.154
Methoxychlor	72-43-5	ug/kg	0.0184	U	0.0463	U	1.7	U	0.34	U	1.1	U	0.35
Toxaphene	8001-35-2	ug/kg	--	--			310	U	82	U	86	U	--
Dioxins_Furans													
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	pg/g	--	--			0.296	U	0.276		0.275	--	
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	pg/g	--	--			0.763	J	0.813	J	0.736	J	--
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	pg/g	--	--			0.283	U	0.297	J	0.306	J	--
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	pg/g	--	--			1.2		1.22		1.28		--
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	pg/g	--	--			0.451	J	0.423	J	0.448	J	--
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	pg/g	--	--			6.1		5.28		6.36		--
2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	pg/g	--	--			0.364		0.545		0.333		--
1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	pg/g	--	--			0.124	U	0.143	J	0.124	J	--
2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	pg/g	--	--			0.369	J	0.343	J	0.253	J	--
1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	pg/g	--	--			0.217	J	0.14	J	0.122	J	--
1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	pg/g	--	--			0.124	J	0.086	J	0.093	J	--
1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	pg/g	--	--			0.0594	U	0.0596	U	0.0535	U	--
2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	pg/g	--	--			0.132	J	0.119	J	0.135	J	--
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	pg/g	--	--			1.14	J	0.63	J	0.652	J	--
1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	pg/g	--	--			0.084	J	0.0596	U	0.077	J	--
Dioxin_Furan_Homolog													
Tetrachlorodibenzo-p-dioxin homologs	41903-57-5	pg/g	--	--			0.0594	U	0.276		0.275	--	
Pentachlorodibenzo-p-dioxin homologs	36088-22-9	pg/g	--	--			0.87		0.813		0.817	--	
Hexachlorodibenzo-p-dioxin homologs	34465-46-8	pg/g	--	--			2.79		2.93		3.79	--	
Heptachlorodibenzo-p-dioxin homologs	37871-00-4	pg/g	--	--			9.15		8.13		10.2	--	
Octachlorodibenzo-p-dioxin	3268-87-9	pg/g	--	--			19.4		17.6		20.8	--	
Tetrachlorodibenzofuran homologs	30402-14-3	pg/g	--	--			0.358		0.517		0.333	--	
Pentachlorodibenzofuran homologs	30402-15-4	pg/g	--	--			0.985		0.833		0.805	--	
Hexachlorodibenzofuran homologs	55684-94-1	pg/g	--	--			1.72		0.893		1.04	--	
Heptachlorodibenzofuran homologs	38998-75-3	pg/g	--	--			2.61		1.32		1.65	--	
Octachlorodibenzofuran	39001-02-0	pg/g	--	--			2.03	J	1.25	J	1.63	J	--
Aroclors													
Aroclor 1016	12674-11-2	ug/kg	0.00171	U	0.00377	U	0.000519	U	0.00044	U	0.000541	U	0.00299
Aroclor 1221	11104-28-2	ug/kg	0.000597	U	0.00135	U	0.000235	U	0.000188	U	0.000214	U	0.00155
Aroclor 1232	11141-16-5	ug/kg	0.00151	U	0.00327	U	0.000202	U	0.000203	U	0.000188	U	0.00217
Aroclor 1242	53469-21-9	ug/kg	8.16	NJ	4.04	NJ	4.67	NJ	5.91	NJ	4.95	NJ	10.7
Aroclor 1248	12672-29-6	ug/kg	0.00502	U	0.00511	U	0.00903	U	0.0153	U	0.0115	U	0.00804

Table 4-1. Analytical Results for Stomach Content and Fish Tissue Samples.

Analysis/Analyte	CAS #	Sample ID Sample Date/Time	LW2-T01 SC	LW2-T01-NOAA SC	LW2-T01-REP1	LW2-T01-REP2	LW2-T01-REP3	LW2-T02 SC						
			X Coordinate	Y Coordinate	5/10/05 13:30 7617314.805 718525.7315	5/14/05 17:40 7617314.805 718525.7315	5/10/05 13:30 7617314.805 718525.7315	5/10/05 14:30 7617314.805 718525.7315	5/10/05 16:15 7617314.805 718525.7315	5/10/05 18:00 7626519.107 703755.7939				
Aroclor 1254	11097-69-1	ug/kg	24.9	NJ	15.7	NJ	40.9	NJ	24	NJ	22.5	NJ		
Aroclor 1260	11096-82-5	ug/kg	55.1	NJ	23.3	NJ	263	NJ	43.6	NJ	45	NJ	18.9	NJ
Total Aroclors	12767-79-2	ug/kg	88.2	JT	43	JT	309	JT	85.6	JT	74	JT	52.1	JT
PCB_Congeners														
PCB001	2051-60-7	pg/g	19.2		4.38	J	4.09		4.98		5.8		27.9	
PCB002	2051-61-8	pg/g	3.35		3.6	U	0.556	U	0.662		0.602		4.69	
PCB003	2051-62-9	pg/g	7.93	U	5.21	U	1.51		1.73		1.85		15.6	U
PCB004	13029-08-8	pg/g	84.6		23.7		49.2		52.7		54.7		124	
PCB005	16605-91-7	pg/g	3.02		3.49	U	1.97		1.47		1.78		4.99	U
PCB006	25569-80-6	pg/g	29.2		11.9		17.5		16.7		19.8		59.3	
PCB007	33284-50-3	pg/g	7.93		4.12	J	3.36		3.16		3.93		16.7	
PCB008	34883-43-7	pg/g	162		53.3		90.4		89.5		101		277	
PCB009	34883-39-1	pg/g	10.4		3.3	U	5.65		5.59		6.58		20.5	
PCB010	33146-45-1	pg/g	3.57		2.02	U	2		1.95		2.4		6.77	
PCB011	2050-67-1	pg/g	729		455		8.61		8.94		8.62		179	
PCB012 & 013	PCB012_013	pg/g	13.9		9.2	U	1.56		1.18		1.37		24.1	
PCB014	34883-41-5	pg/g	3.11	U	6.02	U	0.614	U	0.616	U	0.553	U	4.93	U
PCB015	2050-68-2	pg/g	203		100		14.8		11.5		12.8		278	
PCB016	38444-78-9	pg/g	75.1		56.4		65.6		62.1		65.1		192	
PCB017	37680-66-3	pg/g	152		89		108		127		113		280	
PCB018 & 030	PCB018_030	pg/g	216		155		158		178		166		452	
PCB019	38444-73-4	pg/g	37.3		36.7		48.1		49.5		45.4		62.8	
PCB020 & 028	PCB020_028	pg/g	1400		675		820		1110		864		1800	
PCB021 & 033	PCB021_033	pg/g	285		172		230		209		228		453	
PCB022	38444-85-8	pg/g	225		155		128		152		132		413	
PCB023	55720-44-0	pg/g	0.67	U	6.32	U	0.558		0.735		0.513		1.71	U
PCB024	55702-45-9	pg/g	3.6		1.83	J	2.78		3.51		2.95		8.37	
PCB025	55712-37-3	pg/g	51.9		35.3		35.7		44.1		35.7		86.6	
PCB026 & 029	PCB026_029	pg/g	106		86.8		92.7		121		94.2		200	
PCB027	38444-76-7	pg/g	18.3		21.7		15.7		16.8		15.5		46.7	
PCB031	16606-02-3	pg/g	941		461		487		592		521		1040	
PCB032	38444-77-8	pg/g	256		94.9		78.7		113		82.7		238	
PCB034	37680-68-5	pg/g	3.17		1.45	U	1.71		2.53		1.8		3.73	U
PCB035	37680-69-6	pg/g	14.5		6.8	U	0.74	U	0.743	U	0.667	U	13.2	
PCB036	38444-87-0	pg/g	5.3		1.73	U	0.578	U	0.58	U	0.52	U	1.01	U
PCB037	38444-90-5	pg/g	377		226		50.6		46.3		41		370	
PCB038	53555-66-1	pg/g	2.42	U	1.47	U	2.37		1.88	U	1.01	U	1.05	U
PCB039	38444-88-1	pg/g	4.35	U	3.53	J	5.53		8.21		5.48		7.58	
PCB040 & 041 & 071	PCB040_041_071	pg/g	480		550		454		720		386		823	
PCB042	36559-22-5	pg/g	229		196		178		295		153		424	
PCB043	70362-46-8	pg/g	24.3		22.1		30.9		44.8		26.8		45.9	
PCB044 & 047 & 065	PCB044_047_065	pg/g	1370		1090		1670		2020		1080		1730	
PCB045 & 051	PCB045_051	pg/g	97.5		106		153		127		91.4		221	
PCB046	41464-47-5	pg/g	17.5		29.3	U	14.6		18.5		12.3		58.5	
PCB048	70362-47-9	pg/g	147		129		175		263		160		266	
PCB049 & 069	PCB049_069	pg/g	884		1030		848		1300		651		1050	
PCB050 & 053	PCB050_053	pg/g	68.1		100		95.8		111		68.2		180	
PCB052	35693-99-3	pg/g	1190		1260		1440		2270		1090		2000	

Table 4-1. Analytical Results for Stomach Content and Fish Tissue Samples.

Analysis/Analyte	CAS #	Sample ID Sample Date/Time	LW2-T01 SC 5/10/05 13:30	LW2-T01-NOAA SC 5/14/05 17:40	LW2-T01-REP1 5/10/05 13:30	LW2-T01-REP2 5/10/05 14:30	LW2-T01-REP3 5/10/05 16:15	LW2-T02 SC 5/10/05 18:00
		X Coordinate Y Coordinate Units	7617314.805 718525.7315	7617314.805 718525.7315	7617314.805 718525.7315	7617314.805 718525.7315	7617314.805 718525.7315	7626519.107 703755.7939
PCB054	15968-05-5	pg/g	5.01	8.59	10.8	8.5	7.61	4.56
PCB055	74338-24-2	pg/g	18.7	15.5	20.1	35.4	23.7	30.6
PCB056	41464-43-1	pg/g	358	237	71.7	208	68.8	608
PCB057	70424-67-8	pg/g	6.35	4.07	J	14.8	11.2	6.05
PCB058	41464-49-7	pg/g	2.17	2.8	J	1.47	5.47	7.46
PCB059 & 062 & 075	PCB059_062_075	pg/g	93.6	130	147	141	88.5	168
PCB060	33025-41-1	pg/g	338	191	313	592	285	568
PCB061 & 070 & 074 & 076	PCB061_070_074_	pg/g	2400	1540	2110	3470	1890	2800
PCB063	74472-34-7	pg/g	79.4	41.7	70.8	114	65.4	92.3
PCB064	52663-58-8	pg/g	593	636	467	788	447	804
PCB066	32598-10-0	pg/g	1280	825	1350	2520	1240	2060
PCB067	73575-53-8	pg/g	35.8	21	39.3	42	25.5	44.4
PCB068	73575-52-7	pg/g	18	7.65	1.71	14.4	10.5	8.39
PCB072	41464-42-0	pg/g	17.2	28.7	21.4	22.4	13.7	12
PCB073	74338-23-1	pg/g	4.79	5.14	17.4	10.7	9.34	10.9
PCB077	32598-13-3	pg/g	143	75.6	61.9	122	54.5	211
PCB078	70362-49-1	pg/g	5.06	U	9.78	U	2.72	U
PCB079	41464-48-6	pg/g	15.9	13.4	40	37.3	21.6	17.6
PCB080	33284-52-5	pg/g	8.78	U	17	U	2.42	U
PCB081	70362-50-4	pg/g	6.62	U	5.01	U	10.3	U
PCB082	52663-62-4	pg/g	215	117	199	278	140	240
PCB083 & 099	PCB083_099	pg/g	1830	1050	2810	2440	1720	1460
PCB084	52663-60-2	pg/g	225	218	369	265	168	319
PCB085 & 116 & 117	PCB085_116_117	pg/g	514	303	592	794	460	545
PCB086 & 087 & 097 & 108 & 119 & 125	PCB086_087_097_	pg/g	1290	917	2300	2070	1280	1350
PCB088 & 091	PCB088_091	pg/g	225	210	469	343	220	253
PCB089	73575-57-2	pg/g	7.93	U	11.1	13.2	16.1	8.91
PCB090 & 101 & 113	PCB090_101_113	pg/g	2810	2930	7680	3970	2930	2240
PCB092	52663-61-3	pg/g	429	386	1410	683	490	393
PCB093 & 095 & 098 & 100 & 102	PCB093_095_098_	pg/g	1160	1120	3440	1530	1170	1260
PCB094	73575-55-0	pg/g	8.14	U	12.2	35	11.5	8.09
PCB096	73575-54-9	pg/g	5.7	8.62	13.3	6.84	4.61	9.96
PCB103	60145-21-3	pg/g	22.3	22.9	79.3	27.3	23.9	16.5
PCB104	56558-16-8	pg/g	1.42	J	1.27	U	2.18	0.586
PCB105	32598-14-4	pg/g	1230	550	1310	1610	1060	1160
PCB106	70424-69-0	pg/g	3.03	U	5.84	3.37	U	4.78
PCB107 & 124	PCB107_124	pg/g	128	109	122	131	89.8	102
PCB109	74472-35-8	pg/g	286	113	278	278	201	172
PCB110 & 115	PCB110_115	pg/g	2190	1920	4140	3110	2130	2090
PCB111	39635-32-0	pg/g	6.78	U	1.54	J	3.81	4.24
PCB112	74472-36-9	pg/g	2.65	U	5.12	U	29.7	25
PCB114	74472-37-0	pg/g	80.3	33.3	90.5	119	72.9	76.7
PCB118	31508-00-6	pg/g	3610	1630	4440	4060	3100	2520
PCB120	68194-12-7	pg/g	21.9	10.3	33.1	15.7	15.7	9.68
PCB121	56558-18-0	pg/g	5.3	2.35	J	11.4	3.21	3.87
PCB122	76842-07-4	pg/g	35.9	13.6	10.5	17.2	7.91	30.5
PCB123	65510-44-3	pg/g	60.4	37.5	75.4	86	61.7	64.7
PCB126	57465-28-8	pg/g	13.8	5.22	U	16.8	13.8	10.7
PCB127	39635-33-1	pg/g	5.53	1.66	U	9.59	8.5	7.61

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Table 4-1. Analytical Results for Stomach Content and Fish Tissue Samples.

Analysis/Analyte	CAS #	Sample ID Sample Date/Time	LW2-T01 SC 5/10/05 13:30	LW2-T01-NOAA SC 5/14/05 17:40	LW2-T01-REP1 5/10/05 13:30	LW2-T01-REP2 5/10/05 14:30	LW2-T01-REP3 5/10/05 16:15	LW2-T02 SC 5/10/05 18:00
		X Coordinate Y Coordinate						
		Units						
PCB128 & 166	PCB128_166	pg/g	767	351	1660	700	608	391
PCB129 & 138 & 160 & 163	PCB129_138_160_	pg/g	7860	4010	26900	7380	6920	3450
PCB130	52663-66-8	pg/g	411	165	847	312	287	163
PCB131	61798-70-7	pg/g	24.9	21.2	92.3	29.7	21.7	20.7
PCB132	38380-05-1	pg/g	811	726	4900	935	804	594
PCB133	35694-04-3	pg/g	193	74	366	125	129	73.8
PCB134 & 143	PCB134_143	pg/g	129	117	735	162	140	103
PCB135 & 151 & 154	PCB135_151_154	pg/g	1190	1290	7550	1500	1400	940
PCB136	38411-22-2	pg/g	224	278	1700	274	253	184
PCB137	35694-06-5	pg/g	186	90.4	259	237	192	108
PCB139 & 140	PCB139_140	pg/g	51.8	37.4	95.2	62	56.4	41.1
PCB141	52712-04-6	pg/g	1230	781	6660	1250	1170	598
PCB142	41411-61-4	pg/g	2.48	U	4.79	U	1.88	U
PCB144	68194-14-9	pg/g	159	149	1060	205	191	107
PCB145	74472-40-5	pg/g	0.28	J	0.985	J	1.54	0.534
PCB146	51908-16-8	pg/g	1680	736	4060	1220	1160	669
PCB147 & 149	PCB147_149	pg/g	3200	3120	19700	3710	3340	2220
PCB148	74472-41-6	pg/g	13.4	7.43	34.2	11	11.4	6.65
PCB150	68194-08-1	pg/g	3.29	U	3.99	J	21.4	4.79
PCB152	68194-09-2	pg/g	1.73	U	2.58	J	10.3	1.54
PCB153 & 168	PCB153_168	pg/g	8470	4470	31300	8130	8050	3820
PCB155	33979-03-2	pg/g	2.66	U	0.936	U	5.58	2.3
PCB156 & 157	PCB156_157	pg/g	715	279	1690	608	553	306
PCB158	74472-42-7	pg/g	661	354	2080	581	562	312
PCB159	39635-35-3	pg/g	47.8	49.4	400	52.8	50.1	32.2
PCB161	74472-43-8	pg/g	2.8	U	5.42	U	1.32	U
PCB162	39635-34-2	pg/g	25.3	12.3	35.3	21	17.9	12.6
PCB164	74472-45-0	pg/g	356	257	1690	372	356	216
PCB165	74472-46-1	pg/g	11	3.7	J	17.2	4.9	4.92
PCB167	52663-72-6	pg/g	329	140	684	252	232	134
PCB169	32774-16-6	pg/g	5.35	U	1.94	U	10.1	U
PCB170	35065-30-6	pg/g	2610	997	12500	1920	1950	820
PCB171 & 173	PCB171_173	pg/g	552	345	3480	464	467	227
PCB172	52663-74-8	pg/g	617	252	2130	386	391	191
PCB174	38411-25-5	pg/g	1180	1180	10400	1290	1170	703
PCB175	40186-70-7	pg/g	93.1	40	404	66.1	68.8	35.4
PCB176	52663-65-7	pg/g	95.3	113	1070	108	99.5	64.1
PCB177	52663-70-4	pg/g	1460	708	7280	1080	961	483
PCB178	52663-67-9	pg/g	656	325	2090	432	433	254
PCB179	52663-64-6	pg/g	309	471	3030	367	334	227
PCB180 & 193	PCB180_193	pg/g	6820	2720	31300	5410	5610	2270
PCB181	74472-47-2	pg/g	13.4	7.13	U	37.3	11	10.7
PCB182	60145-23-5	pg/g	8.36	U	8.18	U	25.1	9.41
PCB183 & 185	PCB183_185	pg/g	1580	938	8900	1390	1440	685
PCB184	74472-48-3	pg/g	1.28	U	1.22	J	2.53	1.59
PCB186	74472-49-4	pg/g	2.67	U	5.17	U	0.27	J
PCB187	52663-68-0	pg/g	3520	2460	14000	2900	2770	1510
PCB188	74487-85-7	pg/g	4.61	2.09	U	8.9	3.14	3.16
PCB189	39635-31-9	pg/g	110	41.1	360	68.9	71.1	36.3

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Table 4-1. Analytical Results for Stomach Content and Fish Tissue Samples.

Analysis/Analyte	CAS #	Sample ID Sample Date/Time	LW2-T01 SC	LW2-T01-NOAA SC	LW2-T01-REP1	LW2-T01-REP2	LW2-T01-REP3	LW2-T02 SC
			X Coordinate	Y Coordinate	5/10/05 13:30 7617314.805 718525.7315	5/14/05 17:40 7617314.805 718525.7315	5/10/05 13:30 7617314.805 718525.7315	5/10/05 14:30 7617314.805 718525.7315
PCB190	41411-64-7	pg/g	569	244	2490	393	395	181
PCB191	74472-50-7	pg/g	108	44.2	478	78.1	83.3	35.7
PCB192	74472-51-8	pg/g	6.22	U	12	U	1.23	U
PCB194	35694-08-7	pg/g	1370	405	4700	725	792	455
PCB195	52663-78-2	pg/g	487	205	1980	254	269	153
PCB196	42740-50-1	pg/g	620	220	2520	359	380	210
PCB197 & 200	PCB197_200	pg/g	91.9	88.6	578	66.8	62.2	57.6
PCB198 & 199	PCB198_199	pg/g	1560	727	4590	849	845	567
PCB201	40186-71-8	pg/g	119	50.8	458	73.1	72	44.5
PCB202	2136-99-4	pg/g	262	156	569	149	150	135
PCB203	52663-76-0	pg/g	864	395	2930	528	518	307
PCB204	74472-52-9	pg/g	0.523	U	0.21	U	0.381	U
PCB205	74472-53-0	pg/g	69.5	27.6	246	37.9	38.2	22.7
PCB206	40186-72-9	pg/g	445	156	704	208	194	203
PCB207	52663-79-3	pg/g	49.2	20.2	91.5	22.8	23	21.4
PCB208	52663-77-1	pg/g	143	52.7	156	66.8	64.4	62.8
PCB209	2051-24-3	pg/g	157	32.8	45.7	39.3	39.4	106
Total PCB Congeners	1336-36-3	pg/g	87000	53800	277000	88200	72300	59800
PCB Homologs								
Monochlorobiphenyl	27323-18-8	pg/g	22.5	4.38	6.16	7.37	8.25	32.6
Dichlorobiphenyl	25512-42-9	pg/g	1250	648	195	193	213	985
Trichlorobiphenyl	25323-68-6	pg/g	4170	2270	2330	2840	2410	5660
Tetrachlorobiphenyl	26914-33-0	pg/g	9910	8250	9810	15300	7970	14200
Pentachlorobiphenyl	25429-29-2	pg/g	16400	11700	30100	21900	15400	14300
Hexachlorobiphenyl	26601-64-9	pg/g	28700	17500	115000	28100	26500	14500
Heptachlorobiphenyl	28655-71-2	pg/g	20300	10900	100000	16400	16300	7750
Octachlorobiphenyl	55722-26-4	pg/g	5440	2280	18600	3040	3130	1950
Nonachlorobiphenyl	53742-07-7	pg/g	637	229	952	298	282	287
Total PCB Homologs		pg/g	86830	53781	276993	88078	72213	59665

Table 4-1. Analytical Results for Stomach Content and Fish Tissue Samples.

Analysis/Analyte	CAS #	Sample ID Sample Date/Time	LW2-T02-NOAA SC	LW2-T02-REP1	LW2-T02-REP2	LW2-T02-REP3	LW2-T03 SC	LW2-T03-REP1
			X Coordinate	5/14/05 13:04	5/10/05 18:00	5/10/05 19:10	5/10/05 19:50	5/10/05 12:50
Conventional			Y Coordinate	7626519.107	7626519.107	7626519.107	7637229.949	7637229.949
Total solids	TSO	percent	Units	703755.7939	703755.7939	703755.7939	694088.1142	694088.1142
Lipids	66455-18-3	percent		--	19.5	19.6	--	20.2
				--	1.6	1.7	--	1.7
Metals								
Aluminum, total	7429-90-5	mg/kg	--	9.3405	3.1752	3.3756	--	6.06
Antimony, total	7440-36-0	mg/kg	--	0.00312	U	0.002156	U	0.00202
Arsenic, total	7440-38-2	mg/kg	--	0.0663	0.05684	0.07178	--	0.04646
Cadmium, total	7440-43-9	mg/kg	--	0.01911	0.012152	0.014744	--	0.011312
Chromium, total	7440-47-3	mg/kg	--	0.0585	U	0.0582	U	0.0606
Copper, total	7440-50-8	mg/kg	--	0.8073	0.82516	0.79152	--	0.75548
Lead, total	7439-92-1	mg/kg	--	0.0741	U	0.0392	U	0.02222
Mercury, total	7439-97-6	mg/kg	--	0.01131	0.011172	J	0.010864	0.01313
Nickel, total	7440-02-0	mg/kg	--	0.28275	0.31556	0.24056	--	0.202
Selenium, total	7782-49-2	mg/kg	--	0.273	0.1764	0.2328	--	0.1212
Silver, total	7440-22-4	mg/kg	--	0.00273	U	0.00196	U	0.001616
Zinc, total	7440-66-6	mg/kg	--	30.81	29.008	29.1	--	24.038
Butyltins								
Butyltin ion	78763-54-9	ug/kg	--	--	2.6	J	4.6	--
Dibutyltin ion	14488-53-0	ug/kg	--	--	2	U	1.7	--
Tributyltin ion	36643-28-4	ug/kg	--	--	4.1	J	4.1	--
Tetrabutyltin	1461-25-2	ug/kg	--	--	0.29	U	0.25	--
PAHs								
2-Methylnaphthalene	91-57-6	ug/kg	41.5	4.3	4.3	4.3	12	U
Acenaphthene	83-32-9	ug/kg	131	0.67	0.69	0.65	4.44	J
Acenaphthylene	208-96-8	ug/kg	6.99	J	0.33	J	0.738	J
Anthracene	120-12-7	ug/kg	225	0.37	J	0.33	J	0.3
Fluorene	86-73-7	ug/kg	143	0.52	0.58	0.56	5.31	J
Naphthalene	91-20-3	ug/kg	37.6	U	3.9	3.9	27.3	U
Phenanthrene	85-01-8	ug/kg	862	1.4	1.3	1.4	33.9	0.88
Dibenz(a,h)anthracene	53-70-3	ug/kg	2.68	J	0.2	J	0.12	U
Benz(a)anthracene	56-55-3	ug/kg	77.8	0.21	J	0.13	U	0.2
Benzo(a)pyrene	50-32-8	ug/kg	20.7	0.13	U	0.13	U	0.13
Benzo(b)fluoranthene	205-99-2	ug/kg	--	0.26	J	0.16	U	0.16
Benzo(g,h,i)perylene	191-24-2	ug/kg	7.3	J	0.18	U	0.18	U
Benzo(k)fluoranthene	207-08-9	ug/kg	23.8	0.15	J	0.2	J	0.14
Benzo(b+j)fluoranthene	BBJFLANTH	ug/kg	35.3	--	--	--	2.85	J
Chrysene	218-01-9	ug/kg	97.7	0.28	J	0.2	U	0.2
Fluoranthene	206-44-0	ug/kg	475	J	1.1	0.7	1.1	0.37
Indeno(1,2,3-cd)pyrene	193-39-5	ug/kg	8.51	J	0.17	U	0.17	U
Pyrene	129-00-0	ug/kg	301	J	0.74	0.46	J	0.29
Low Molecular Weight PAH	LPAH	ug/kg	1410	JT	11.5	JT	11.4	JT
High Molecular Weight PAH	HPAH	ug/kg	1050	JT	2.94	JT	1.36	JT
Total PAHs	130498-29-2	ug/kg	2460	JT	14.4	JT	12.9	JT

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Table 4-1. Analytical Results for Stomach Content and Fish Tissue Samples.

Analysis/Analyte	CAS #	Sample ID Sample Date/Time	LW2-T02-NOAA SC	LW2-T02-REP1	LW2-T02-REP2	LW2-T02-REP3	LW2-T03 SC	LW2-T03-REP1						
			X Coordinate	Y Coordinate	Units	5/10/05 13:04	5/10/05 18:00	5/10/05 19:10	5/10/05 19:50	5/10/05 12:50	5/10/05 12:50			
SVOCs														
1,2,4-Trichlorobenzene	120-82-1	ug/kg	--	--	--	--	--	--	110	U				
1,2-Dichlorobenzene	95-50-1	ug/kg	--	--	--	--	--	--	130	U				
1,3-Dichlorobenzene	541-73-1	ug/kg	--	--	--	--	--	--	120	UJ				
1,4-Dichlorobenzene	106-46-7	ug/kg	--	--	--	--	--	--	120	UJ				
Benzyl alcohol	100-51-6	ug/kg	--	--	--	--	--	--	72	UJ				
Dibenzofuran	132-64-9	ug/kg	--	0.55	0.64	0.58	--	--	0.61					
Hexachlorobenzene	118-74-1	ug/kg	1.66	0.88	J	1.2	1	J	0.469	J				
Hexachlorobutadiene	87-68-3	ug/kg	0.179	U	1.1	U	1.1	U	0.0308	U				
Hexachloroethane	67-72-1	ug/kg	--	--	--	--	--	--	91	U				
N-Nitrosodiphenylamine	86-30-6	ug/kg	--	--	--	--	--	--	110	U				
Phenols														
2,4-Dimethylphenol	105-67-9	ug/kg	--	--	--	--	--	--	140	U				
2-Methylphenol	95-48-7	ug/kg	--	--	--	--	--	--	570	U				
4-Methylphenol	106-44-5	ug/kg	--	--	--	--	--	--	160	U				
Pentachlorophenol	87-86-5	ug/kg	--	--	--	--	--	--	330	U				
Phenol	108-95-2	ug/kg	--	--	--	--	--	--	190	U				
Phthalates														
Dimethyl phthalate	131-11-3	ug/kg	--	--	--	--	--	--	55	U				
Diethyl phthalate	84-66-2	ug/kg	--	--	--	--	--	--	100	U				
Diethyl phthalate	84-74-2	ug/kg	--	--	--	--	--	--	180	U				
Butylbenzyl phthalate	85-68-7	ug/kg	--	--	--	--	--	--	160	J				
Di-n-octyl phthalate	117-84-0	ug/kg	--	--	--	--	--	--	140	U				
Bis(2-ethylhexyl) phthalate	117-81-7	ug/kg	--	--	--	--	--	--	570	U				
Pesticides														
2,4'-DDD	53-19-0	ug/kg	5.02	9.7	U	12	13	J	3.6	J				
2,4'-DDE	3424-82-6	ug/kg	3.78	1.4	U	1.6	U	0.0289	J	1.5	U			
2,4'-DDT	789-02-6	ug/kg	16.3	8.6		10	10	J	0.149	3	U			
4,4'-DDD	72-54-8	ug/kg	22.8	110		120	130		0.528	1.2	J			
4,4'-DDE	72-55-9	ug/kg	74	87		92	93		6.91	7				
4,4'-DDT	50-29-3	ug/kg	53.1	34		38	38		1.17	12				
Total of 4,4'-DDD, -DDE, -DDT	PP_DDT3ISO	ug/kg	150	T	231	T	250	T	8.61	T	JT			
Aldrin	309-00-2	ug/kg	0.0333	U	1.2	U	0.16	U	0.00576	J	0.16	U		
alpha-Hexachlorocyclohexane	319-84-6	ug/kg	0.0298	U	0.34	U	0.35	U	0.0319	U	0.34	U		
beta-Hexachlorocyclohexane	319-85-7	ug/kg	0.0742	U	0.33	U	0.33	U	0.0225	U	0.33	U		
delta-Hexachlorocyclohexane	319-86-8	ug/kg	0.023	U	0.22	U	0.26	U	0.00586	U	0.38	J		
gamma-Hexachlorocyclohexane	58-89-9	ug/kg	0.0677	U	0.18	U	1.1	U	0.0194	U	1.1	U		
cis-Chlordane	5103-71-9	ug/kg	0.891		0.85	NJ	0.59	NJ	0.73	U	0.358	J		
trans-Chlordane	5103-74-2	ug/kg	0.7	J	3.1	U	2.8	U	2.7	U	0.13	J		
Oxychlordane	27304-13-8	ug/kg	0.663	U	0.41	U	0.42	U	0.41	U	0.868	0.42	U	
cis-Nonachlor	5103-73-1	ug/kg	0.412	J	2.5	U	3.1	U	8.8	U	0.301	J	1.1	U
trans-Nonachlor	39765-80-5	ug/kg	1.37		1.2	U	1.3	U	1.8	U	1.32	J	0.78	

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Table 4-1. Analytical Results for Stomach Content and Fish Tissue Samples.

Analysis/Analyte	CAS #	Sample ID Sample Date/Time	LW2-T02-NOAA SC 5/14/05 13:04	LW2-T02-REP1 5/10/05 18:00	LW2-T02-REP2 5/10/05 19:10	LW2-T02-REP3 5/10/05 19:50	LW2-T03 SC 5/10/05 12:50	LW2-T03-REP1 5/10/05 12:50
			X Coordinate Y Coordinate	Units	7626519.107 703755.7939	7626519.107 703755.7939	7637229.949 694088.1142	7637229.949 694088.1142
Dieldrin	60-57-1		ug/kg	1.58	2.1	1.2	1.1	1.8
alpha-Endosulfan	959-98-8		ug/kg	0.724	J	0.6	NJ	0.141
beta-Endosulfan	33213-65-9		ug/kg	0.561	U	1.2	U	0.198
Endosulfan sulfate	1031-07-8		ug/kg	0.713	J	0.96	J	0.232
Endrin	72-20-8		ug/kg	0.033	J	0.078	U	0.0172
Endrin aldehyde	7421-93-4		ug/kg	0.0286	U	1.1	U	0.0205
Endrin ketone	53494-70-5		ug/kg	0.0075	U	0.42	U	0.0055
Heptachlor	76-44-8		ug/kg	0.11	U	0.57	U	0.00687
Heptachlor epoxide	1024-57-3		ug/kg	0.312	J	1.6	U	0.159
Methoxychlor	72-43-5		ug/kg	0.0437	U	1.4	U	0.014
Toxaphene	8001-35-2		ug/kg	--	80	U	110	U
							--	220
Dioxins_Furans								
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6		pg/g	--	0.457	0.414	0.876	--
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4		pg/g	--	0.619	J	0.569	2.29
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6		pg/g	--	0.249	J	0.19	U
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7		pg/g	--	6.91	1.09	J	2.22
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3		pg/g	--	0.492	J	0.265	J
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9		pg/g	--	11.2	2.39	3.25	--
2,3,7,8-Tetrachlorodibenzofuran	51207-31-9		pg/g	--	4.74	4.86	4.17	--
1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6		pg/g	--	2.03	1.6	1.27	--
2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4		pg/g	--	1.85	1.35	1.14	J
1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9		pg/g	--	0.946	J	0.625	J
1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9		pg/g	--	0.346	J	0.19	J
1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9		pg/g	--	0.055	U	0.0565	U
2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5		pg/g	--	0.218	J	0.112	J
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4		pg/g	--	0.755	J	0.288	J
1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7		pg/g	--	0.07	J	0.0565	U
							0.0597	U
Dioxin_Furan_Homolog								
Tetrachlorodibenzo-p-dioxin homologs	41903-57-5		pg/g	--	0.512	0.414	0.876	--
Pentachlorodibenzo-p-dioxin homologs	36088-22-9		pg/g	--	0.619	0.627	2.29	--
Hexachlorodibenzo-p-dioxin homologs	34465-46-8		pg/g	--	8.02	1.8	3.41	--
Heptachlorodibenzo-p-dioxin homologs	37871-00-4		pg/g	--	12.4	3.23	4.48	--
Octachlorodibenzo-p-dioxin	3268-87-9		pg/g	--	8.28	5.24	7.46	--
Tetrachlorodibenzofuran homologs	30402-14-3		pg/g	--	4.5	4.46	3.95	--
Pentachlorodibenzofuran homologs	30402-15-4		pg/g	--	4.27	3.35	2.78	--
Hexachlorodibenzofuran homologs	55684-94-1		pg/g	--	2.05	1.21	1.06	--
Heptachlorodibenzofuran homologs	38998-75-3		pg/g	--	1.18	0.521	0.78	--
Octachlorodibenzofuran	39001-02-0		pg/g	--	0.602	J	0.432	J
							0.703	J
							--	0.941
Aroclors								
Aroclor 1016	12674-11-2		ug/kg	0.00365	U	0.000582	U	0.00125
Aroclor 1221	11104-28-2		ug/kg	0.00176	U	0.000173	U	0.000177
Aroclor 1232	11141-16-5		ug/kg	0.00276	U	0.000187	U	0.000203
Aroclor 1242	53469-21-9		ug/kg	0.00406	U	10.3	NJ	8.77
Aroclor 1248	12672-29-6		ug/kg	42.2	NJ	0.0174	U	0.0157
							0.0243	U
							0.0243	U
							0.00577	U
							0.00628	U

Table 4-1. Analytical Results for Stomach Content and Fish Tissue Samples.

Analysis/Analyte	CAS #	Sample ID Sample Date/Time	LW2-T02-NOAA SC	LW2-T02-REP1	LW2-T02-REP2	LW2-T02-REP3	LW2-T03 SC	LW2-T03-REP1						
			X Coordinate	5/14/05 13:04	5/10/05 18:00	5/10/05 19:10	5/10/05 19:50	5/10/05 12:50						
		Units		7626519.107	7626519.107	7626519.107	7637229.949	7637229.949						
				703755.7939	703755.7939	703755.7939	694088.1142	694088.1142						
Aroclor 1254	11097-69-1	ug/kg	0.0199	U	38	NJ	42.2	NJ	27.6	NJ	47.1	NJ		
Aroclor 1260	11096-82-5	ug/kg	12.9	NJ	44.5	NJ	55.6	NJ	45.9	NJ	124	NJ	198	NJ
Total Aroclors	12767-79-2	ug/kg	55.1	JT	92.8	JT	100	JT	101	JT	163	JT	253	JT
PCB_Congeners														
PCB001	2051-60-7	pg/g	5.17		6.51		7.28		6.41		48.7		21.4	
PCB002	2051-61-8	pg/g	3.57	U	0.604		0.711		0.656		4.04	U	1.07	
PCB003	2051-62-9	pg/g	5.4		2.04		2.42		1.93		24.8		4.47	
PCB004	13029-08-8	pg/g	74.8		52.7		56.6		55.3		371		238	
PCB005	16605-91-7	pg/g	2.76	U	3.16		3.05		3.18		5.83	U	5.99	
PCB006	25569-80-6	pg/g	9.54		30.1		31.4		33.4		146		101	
PCB007	33284-50-3	pg/g	4.14	U	5.66		6.2		6.71		17.6		10.4	
PCB008	34883-43-7	pg/g	42.2		154		157		172		491		346	
PCB009	34883-39-1	pg/g	2.77	U	9.71		10.2		11.4		29.5		19.6	
PCB010	33146-45-1	pg/g	3.97		2.5		2.75		2.53		10.4		6.39	
PCB011	2050-67-1	pg/g	332		5.82		8.46		9.25		109		5.99	
PCB012 & 013	PCB012_013	pg/g	5.78	J	1.71		2.28		2.45		31.5		4.05	
PCB014	34883-41-5	pg/g	4.76	U	0.569	U	0.584	U	0.617	U	3.42	U	0.584	U
PCB015	2050-68-2	pg/g	67.2		15.1		18.6		16.7		395		32.8	
PCB016	38444-78-9	pg/g	356		148		127		134		226		135	
PCB017	37680-66-3	pg/g	534		229		204		274		453		319	
PCB018 & 030	PCB018_030	pg/g	789		377		348		454		647		403	
PCB019	38444-73-4	pg/g	67.3		61.7		56.3		68.6		136		208	
PCB020 & 028	PCB020_028	pg/g	1170		1950		1610		2470		1590		1070	
PCB021 & 033	PCB021_033	pg/g	113		440		382		535		353		300	
PCB022	38444-85-8	pg/g	280		284		239		315		322		195	
PCB023	55720-44-0	pg/g	5	U	1.26		1.14		1.53		0.966	U	0.495	
PCB024	55702-45-9	pg/g	6.02		9.25		8.47		8.58		8.37		6.38	
PCB025	55712-37-3	pg/g	59.7		64.4		55.9		78.7		114		75.7	
PCB026 & 029	PCB026_029	pg/g	91.9		199		180		270		231		160	
PCB027	38444-76-7	pg/g	50.5		42.6		37		48.9		63.8		50.8	
PCB031	16606-02-3	pg/g	576		946		805		1260		1070		652	
PCB032	38444-77-8	pg/g	289		273		235		312		294		233	
PCB034	37680-68-5	pg/g	1.81	U	4.43		3.91		5.35		2.98		2.33	
PCB035	37680-69-6	pg/g	4.76		0.686	U	0.704	U	0.744	U	9.36		0.704	U
PCB036	38444-87-0	pg/g	1.37	U	0.535	U	0.55	U	0.58	U	3.22	U	0.55	U
PCB037	38444-90-5	pg/g	121		56.9		57.2		66		336		57.3	
PCB038	53555-66-1	pg/g	3.71	U	2.43		2.29		3.27		0.96	U	1.25	
PCB039	38444-88-1	pg/g	14.1	U	12		11.6		16		5.16		4.12	
PCB040 & 041 & 071	PCB040_041_071	pg/g	1150		1240		1050		1410		531		547	
PCB042	36559-22-5	pg/g	783		567		452		610		269		231	
PCB043	70362-46-8	pg/g	63.9		65.2		64.7		95.1		19.7		23.7	
PCB044 & 047 & 065	PCB044_047_065	pg/g	3100		2630		2270		3170		2810		2480	
PCB045 & 051	PCB045_051	pg/g	422		293		268		334		479		521	
PCB046	41464-47-5	pg/g	70.7		59.3		50.2		60.3		46.5		31.9	
PCB048	70362-47-9	pg/g	536		439		373		547		154		124	
PCB049 & 069	PCB049_069	pg/g	1940		1640		1440		2050		1770		1460	
PCB050 & 053	PCB050_053	pg/g	273		221		203		271		338		389	
PCB052	35693-99-3	pg/g	3010		2990		2590		3670		1580		1660	

Table 4-1. Analytical Results for Stomach Content and Fish Tissue Samples.

Analysis/Analyte	CAS #	Sample ID Sample Date/Time	LW2-T02-NOAA SC	LW2-T02-REP1	LW2-T02-REP2	LW2-T02-REP3	LW2-T03 SC	LW2-T03-REP1
			X Coordinate	5/14/05 13:04	5/10/05 18:00	5/10/05 19:10	5/10/05 19:50	5/10/05 12:50
		Y Coordinate	7626519.107	7626519.107	7626519.107	7626519.107	7637229.949	7637229.949
		Units	703755.7939	703755.7939	703755.7939	703755.7939	694088.1142	694088.1142
PCB054	15968-05-5	pg/g	5.32	5.81	5.87	6.72	38.9	57.4
PCB055	74338-24-2	pg/g	24.2	32.2	34.3	50.8	13.4	20.8
PCB056	41464-43-1	pg/g	623	233	212	265	335	120
PCB057	70424-67-8	pg/g	3.78	12	10.1	17.4	4.45	3.99
PCB058	41464-49-7	pg/g	2.72	J	5.22	5.4	8.11	4.2
PCB059 & 062 & 075	PCB059_062_075	pg/g	223	241	211	298	105	100
PCB060	33025-41-1	pg/g	455	927	711	978	258	249
PCB061 & 070 & 074 & 076	PCB061_070_074_	pg/g	2350	4230	3570	5100	1710	1700
PCB063	74472-34-7	pg/g	72.9	148	117	167	46.2	47.1
PCB064	52663-58-8	pg/g	1100	1250	1040	1450	389	425
PCB066	32598-10-0	pg/g	1880	3460	2760	3820	1170	1240
PCB067	73575-53-8	pg/g	41.9	49.6	43.2	66.3	32.4	30.1
PCB068	73575-52-7	pg/g	8.62	11.2	11.2	17.6	25.5	25.5
PCB072	41464-42-0	pg/g	10.8	22.1	19.9	27.1	21.5	21.7
PCB073	74338-23-1	pg/g	10.5	U	9.3	4.33	15.4	20.1
PCB077	32598-13-3	pg/g	83.3	118	112	127	115	74.3
PCB078	70362-49-1	pg/g	7.75	U	3.1	U	4.29	U
PCB079	41464-48-6	pg/g	20.7	35	35.7	48.8	20.3	33.8
PCB080	33284-52-5	pg/g	13.4	U	2.75	U	3.84	U
PCB081	70362-50-4	pg/g	3.21	U	11.8	U	12	U
PCB082	52663-62-4	pg/g	290	349	312	310	184	300
PCB083 & 099	PCB083_099	pg/g	1770	2420	2250	2730	2170	3420
PCB084	52663-60-2	pg/g	390	412	375	405	342	400
PCB085 & 116 & 117	PCB085_116_117	pg/g	667	859	750	883	450	831
PCB086 & 087 & 097 & 108 & 119 & 125	PCB086_087_097_	pg/g	1700	2330	2210	2550	1280	2470
PCB088 & 091	PCB088_091	pg/g	435	432	388	468	600	938
PCB089	73575-57-2	pg/g	38.8	37.5	31	35.5	16.6	18.9
PCB090 & 101 & 113	PCB090_101_113	pg/g	2450	3920	3820	4380	4410	7570
PCB092	52663-61-3	pg/g	393	648	632	746	752	1270
PCB093 & 095 & 098 & 100 & 102	PCB093_095_098_	pg/g	1740	1840	1730	2060	3010	4440
PCB094	73575-55-0	pg/g	16.4	10.3	11	13.3	18.4	37.9
PCB096	73575-54-9	pg/g	11.1	11.9	11.1	12.7	22.2	37.8
PCB103	60145-21-3	pg/g	23.8	26.5	30.3	34.5	101	149
PCB104	56558-16-8	pg/g	1.09	J	0.97	1.18	1.18	4.97
PCB105	32598-14-4	pg/g	762	1590	1660	1860	744	1350
PCB106	70424-69-0	pg/g	4.63	U	0.552	U	1.5	U
PCB107 & 124	PCB107_124	pg/g	64.1	120	122	131	88.5	142
PCB109	74472-35-8	pg/g	133	266	309	316	187	354
PCB110 & 115	PCB110_115	pg/g	2140	3450	3440	3750	2620	5290
PCB111	39635-32-0	pg/g	1.93	U	4.74	4.44	4.28	7.7
PCB112	74472-36-9	pg/g	4.05	U	23.9	0.689	18.1	2.9
PCB114	74472-37-0	pg/g	50.6	110	114	120	43.9	78.2
PCB118	31508-00-6	pg/g	1730	3660	3810	4490	2220	4460
PCB120	68194-12-7	pg/g	7.66	18	18.9	19.1	32.1	62.6
PCB121	56558-18-0	pg/g	1.82	U	2.83	2.81	3.7	7.94
PCB122	76842-07-4	pg/g	23.1	11.4	11.1	13.5	25.9	13.7
PCB123	65510-44-3	pg/g	41.5	82.8	88.4	83.3	43.9	78.4
PCB126	57465-28-8	pg/g	5	14.4	35.3	14.9	11.6	20.2
PCB127	39635-33-1	pg/g	3.33	J	5.97	7.62	10.1	4.29

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Table 4-1. Analytical Results for Stomach Content and Fish Tissue Samples.

Analysis/Analyte	CAS #	Sample ID Sample Date/Time	LW2-T02-NOAA SC	LW2-T02-REP1	LW2-T02-REP2	LW2-T02-REP3	LW2-T03 SC	LW2-T03-REP1
			X Coordinate	5/14/05 13:04	5/10/05 18:00	5/10/05 19:10	5/10/05 19:50	5/10/05 12:50
		Y Coordinate	7626519.107	7626519.107	7626519.107	7626519.107	7637229.949	7637229.949
		Units	703755.7939	703755.7939	703755.7939	703755.7939	694088.1142	694088.1142
PCB128 & 166	PCB128_166	pg/g	337	648	865	864	1010	1790
PCB129 & 138 & 160 & 163	PCB129_138_160_	pg/g	2890	6890	8150	8210	14600	24000
PCB130	52663-66-8	pg/g	143	313	398	374	514	857
PCB131	61798-70-7	pg/g	15.7	28.8	31.1	34.4	61.5	71.1
PCB132	38380-05-1	pg/g	540	979	1000	1170	2710	3600
PCB133	35694-04-3	pg/g	49.6	128	125	140	262	409
PCB134 & 143	PCB134_143	pg/g	88.6	160	198	196	381	614
PCB135 & 151 & 154	PCB135_151_154	pg/g	850	1530	1600	1890	5000	7360
PCB136	38411-22-2	pg/g	141	261	267	332	960	1250
PCB137	35694-06-5	pg/g	107	205	230	278	171	240
PCB139 & 140	PCB139_140	pg/g	43.1	69.7	73.7	83.9	80.7	144
PCB141	52712-04-6	pg/g	466	1230	1370	1380	3700	4510
PCB142	41411-61-4	pg/g	2.19	U	3.4	2.41	U	1.9
PCB144	68194-14-9	pg/g	90.8	191	204	236	702	763
PCB145	74472-40-5	pg/g	0.581	U	0.706	U	0.976	1.22
PCB146	51908-16-8	pg/g	563	1270	1390	1430	2970	4500
PCB147 & 149	PCB147_149	pg/g	1930	3870	4210	4720	12400	18100
PCB148	74472-41-6	pg/g	6.93	14.6	13.8	16.2	29.7	64.4
PCB150	68194-08-1	pg/g	3.19	J	4.56	5.17	6.06	21.6
PCB152	68194-09-2	pg/g	1.87	U	1.25	1.56	1.92	5.65
PCB153 & 168	PCB153_168	pg/g	2760	7470	8790	8670	17700	27800
PCB155	33979-03-2	pg/g	1.07	U	1.63	1.76	2.02	2.47
PCB156 & 157	PCB156_157	pg/g	199	517	749	656	504	1030
PCB158	74472-42-7	pg/g	233	517	659	669	1080	1560
PCB159	39635-35-3	pg/g	18.4	52.6	65.4	67.7	180	270
PCB161	74472-43-8	pg/g	4.29	U	1.14	U	0.967	U
PCB162	39635-34-2	pg/g	7	U	19.8	25.3	20	26.3
PCB164	74472-45-0	pg/g	141	349	398	421	944	1320
PCB165	74472-46-1	pg/g	2.76	U	5.01	5.23	5.51	12
PCB167	52663-72-6	pg/g	76.2	224	315	254	418	622
PCB169	32774-16-6	pg/g	1.07	U	7.14	U	8.35	U
PCB170	35065-30-6	pg/g	598	1940	2200	2020	5340	9220
PCB171 & 173	PCB171_173	pg/g	159	451	508	498	1480	2180
PCB172	52663-74-8	pg/g	125	387	394	390	1060	1660
PCB174	38411-25-5	pg/g	453	1340	1530	1550	4600	7100
PCB175	40186-70-7	pg/g	23.4	66.7	82.6	76	204	314
PCB176	52663-65-7	pg/g	38.5	106	110	133	429	564
PCB177	52663-70-4	pg/g	364	1200	1120	1090	3030	6150
PCB178	52663-67-9	pg/g	160	407	430	463	1170	1940
PCB179	52663-64-6	pg/g	150	337	358	435	1310	2100
PCB180 & 193	PCB180_193	pg/g	1530	5530	7140	5600	15000	23900
PCB181	74472-47-2	pg/g	20.7	47.4	35.5	34.1	17.9	28.5
PCB182	60145-23-5	pg/g	5.18	12.2	14.8	13.3	26	48.5
PCB183 & 185	PCB183_185	pg/g	454	1440	1780	1560	4410	6590
PCB184	74472-48-3	pg/g	1.53	U	2.14	2.36	2.38	3.61
PCB186	74472-49-4	pg/g	0.712	U	0.79	0.603	0.563	0.356
PCB187	52663-68-0	pg/g	1510	3510	3790	3900	8210	15400
PCB188	74487-85-7	pg/g	1.35	J	2.95	3.71	3.48	9.4
PCB189	39635-31-9	pg/g	21.3	66.2	72.6	67.1	157	269

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Table 4-1. Analytical Results for Stomach Content and Fish Tissue Samples.

Analysis/Analyte	CAS #	Sample ID Sample Date/Time	LW2-T02-NOAA SC	LW2-T02-REP1	LW2-T02-REP2	LW2-T02-REP3	LW2-T03 SC	LW2-T03-REP1			
			X Coordinate	Y Coordinate	Units	5/10/05 13:04	5/10/05 18:00	5/10/05 19:10	5/10/05 19:50	5/10/05 12:50	5/10/05 12:50
PCB190	41411-64-7	pg/g	123	412		501	443	1110	1970		
PCB191	74472-50-7	pg/g	24.2	79		91.6	85	225	337		
PCB192	74472-51-8	pg/g	9.52	U	1.14	U	0.105	1.23	U	6.82	U
PCB194	35694-08-7	pg/g	252		802	942	828	1980	3410		
PCB195	52663-78-2	pg/g	105		292	339	308	821	1440		
PCB196	42740-50-1	pg/g	130		382	479	450	1040	1730		
PCB197 & 200	PCB197_200	pg/g	30.7		77.2	83.2	90.5	243	355		
PCB198 & 199	PCB198_199	pg/g	354		933	995	1010	2120	3780		
PCB201	40186-71-8	pg/g	29.5		73.4	87.9	88.4	190	326		
PCB202	2136-99-4	pg/g	58.3		150	145	175	333	555		
PCB203	52663-76-0	pg/g	207		572	742	691	1460	2440		
PCB204	74472-52-9	pg/g	0.654	U	1.32	1.01	1.08	0.71	J	0.855	
PCB205	74472-53-0	pg/g	14.8		45.2	50.8	43	97.1	178		
PCB206	40186-72-9	pg/g	139		318	277	279	301	535		
PCB207	52663-79-3	pg/g	16		32.3	31.2	30.9	45.8	70.8		
PCB208	52663-77-1	pg/g	38.9		85.6	72.5	80.1	74.2	120		
PCB209	2051-24-3	pg/g	98		92.8	73.7	76.5	31.9	40.6		
Total PCB Congeners	1336-36-3	pg/g	57100		97100	100000	111000	162000	246000		
PCB Homologs											
Monochlorobiphenyl	27323-18-8	pg/g	14.1		9.15	10.4	8.99	73.5	26.9		
Dichlorobiphenyl	25512-42-9	pg/g	535		281	296	313	1600	771		
Trichlorobiphenyl	25323-68-6	pg/g	4510		5100	4370	6320	5860	3880		
Tetrachlorobiphenyl	26914-33-0	pg/g	18200		20900	17700	24700	12300	11600		
Pentachlorobiphenyl	25429-29-2	pg/g	14900		22700	22200	25500	19400	33800		
Hexachlorobiphenyl	26601-64-9	pg/g	11700		27000	31100	32100	66500	101000		
Heptachlorobiphenyl	28655-71-2	pg/g	5770		17300	20200	18400	47800	79800		
Octachlorobiphenyl	55722-26-4	pg/g	1180		3330	3860	3680	8280	14200		
Nonachlorobiphenyl	53742-07-7	pg/g	194		435	381	390	421	725		
Total PCB Homologs		pg/g	57003		97055	100117	111412	162235	245803		

Table 4-1. Analytical Results for Stomach Content and Fish Tissue Samples.

Analysis/Analyte	CAS #		Sample ID Sample Date/Time	LW2-T03-REP2 5/12/05 16:25	LW2-T03-REP3 5/12/05 17:30	LW2-T04 SC 5/12/05 1:45	LW2-T04-REP1 5/12/05 13:35	LW2-T04-REP2 5/12/05 1:45	LW2-T04-REP3 5/12/05 14:35			
			X Coordinate Y Coordinate Units	7637229.949 694088.1142	7637229.949 694088.1142	7649272.819 657288.3127	7649272.819 657288.3127	7649272.819 657288.3127	7649272.819 657288.3127			
Conventional												
Total solids	TSO	percent	19.7		19.5	--	19.3	19.9	19.5			
Lipids	66455-18-3	percent	1.8		1.8	--	1.8	1.8	1.9			
Metals												
Aluminum, total	7429-90-5	mg/kg	6.2252		10.179	U	13.4521	9.00475	T	12.09		
Antimony, total	7440-36-0	mg/kg	0.001576	U	0.00156	U	0.001544	U	0.001592	UT	0.00156	
Arsenic, total	7440-38-2	mg/kg	0.06107		0.0585	--	0.05597	0.04776	T	0.0468		
Cadmium, total	7440-43-9	mg/kg	0.009653		0.0117	--	0.016405	0.007761	T	0.011115		
Chromium, total	7440-47-3	mg/kg	0.0591	U	0.0585	U	0.0579	U	0.0597	UT	0.0585	
Copper, total	7440-50-8	mg/kg	0.78209		0.9282	--	0.92061	0.878585	T	0.95745		
Lead, total	7439-92-1	mg/kg	0.02364	U	0.0273	U	0.02509	U	0.00995	UT	0.00975	
Mercury, total	7439-97-6	mg/kg	0.012411		0.01014	J	0.012738	0.009353	J	0.01287		
Nickel, total	7440-02-0	mg/kg	0.31914		0.2613	--	0.30108	0.408945	JT	0.2457		
Selenium, total	7782-49-2	mg/kg	0.1182		0.117	--	0.1158	0.2189	JT	0.1365		
Silver, total	7440-22-4	mg/kg	0.002364	U	0.001755	U	0.002702	U	0.002587	UT	0.00234	
Zinc, total	7440-66-6	mg/kg	31.52		28.665	--	28.757	26.865	T	29.055		
Butyltins												
Butyltin ion	78763-54-9	ug/kg	5.4	J	1.5	U	--	1.1	U	1.1	U	0.18
Dibutyltin ion	14488-53-0	ug/kg	2.3	U	0.89	U	--	0.58	U	1	U	0.8
Tributyltin ion	36643-28-4	ug/kg	2	J	1.9	J	--	0.37	J	0.45	J	0.42
Tetrabutyltin	1461-25-2	ug/kg	0.38	U	0.16	U	--	0.15	U	0.16	U	0.16
PAHs												
2-Methylnaphthalene	91-57-6	ug/kg	5.5		6.9		6.15	U	3.4	3.3	4	
Acenaphthene	83-32-9	ug/kg	0.77		0.77		1.96	J	0.38	J	0.41	
Acenaphthylene	208-96-8	ug/kg	0.35	J	0.35	J	0.764	J	0.19	J	0.15	
Anthracene	120-12-7	ug/kg	0.24	J	0.3	J	1.78	J	0.15	J	0.17	
Fluorene	86-73-7	ug/kg	0.64		0.64		2.07	U	0.36	J	0.39	
Naphthalene	91-20-3	ug/kg	5		6.8		11	U	3	U	2.8	
Phenanthrene	85-01-8	ug/kg	1		1.1		23.5		0.84		0.62	
Dibenz(a,h)anthracene	53-70-3	ug/kg	0.12	U	0.15	J	0.207	U	0.27	J	0.21	
Benz(a)anthracene	56-55-3	ug/kg	0.13	U	0.13	U	2.66	U	0.13	U	0.13	
Benzo(a)pyrene	50-32-8	ug/kg	0.13	U	0.13	U	1.07	J	0.13	U	0.13	
Benzo(b)fluoranthene	205-99-2	ug/kg	0.16	J	0.16	U	--	0.16	U	0.16	U	0.16
Benzo(g,h,i)perylene	191-24-2	ug/kg	0.18	U	0.18	U	2.3	U	0.18	U	0.18	U
Benzo(k)fluoranthene	207-08-9	ug/kg	0.14	U	0.14	U	1.86	J	0.14	U	0.14	U
Benzo(b+j)fluoranthene	BBJFLANTH	ug/kg	--		--		2.43	--	--	--	--	
Chrysene	218-01-9	ug/kg	0.2	U	0.2	U	8.01		0.2	U	0.2	
Fluoranthene	206-44-0	ug/kg	0.46	J	0.46	J	24.3	J	0.61	U	0.37	
Indeno(1,2,3-cd)pyrene	193-39-5	ug/kg	0.17	U	0.17	U	1.27	U	0.17	U	0.17	
Pyrene	129-00-0	ug/kg	0.31	J	0.35	J	19.1	J	0.49	J	0.29	
Low Molecular Weight PAH	LPAH	ug/kg	13.5	JT	16.9	JT	28	JT	5.32	JT	5.04	
High Molecular Weight PAH	HPAH	ug/kg	0.93	JT	0.96	JT	59.4	JT	1.37	JT	0.21	
Total PAHs	130498-29-2	ug/kg	14.4	JT	17.8	JT	87.4	JT	6.69	JT	5.25	
												10.1

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Table 4-1. Analytical Results for Stomach Content and Fish Tissue Samples.

Analysis/Analyte	CAS #	Sample ID Sample Date/Time	LW2-T03-REP2 5/12/05 16:25	LW2-T03-REP3 5/12/05 17:30	LW2-T04 SC 5/12/05 1:45	LW2-T04-REP1 5/12/05 13:35	LW2-T04-REP2 5/12/05 1:45	LW2-T04-REP3 5/12/05 14:35
			X Coordinate Y Coordinate Units	7637229.949 694088.1142	7637229.949 694088.1142	7649272.819 657288.3127	7649272.819 657288.3127	7649272.819 657288.3127
SVOCs								
1,2,4-Trichlorobenzene	120-82-1	ug/kg	--	140	U	--	21	U
1,2-Dichlorobenzene	95-50-1	ug/kg	--	170	U	--	25	U
1,3-Dichlorobenzene	541-73-1	ug/kg	--	150	UJ	--	23	UJ
1,4-Dichlorobenzene	106-46-7	ug/kg	--	150	UJ	--	23	UJ
Benzyl alcohol	100-51-6	ug/kg	--	200	J	--	57	J
Dibenzofuran	132-64-9	ug/kg	0.68	0.75	--	--	0.37	J
Hexachlorobenzene	118-74-1	ug/kg	0.74	J	0.88	0.767	0.57	J
Hexachlorobutadiene	87-68-3	ug/kg	1.1	U	--	0.00589	1.1	U
Hexachloroethane	67-72-1	ug/kg	--	120	U	--	18	U
N-Nitrosodiphenylamine	86-30-6	ug/kg	--	130	U	--	20	U
Phenols								
2,4-Dimethylphenol	105-67-9	ug/kg	--	180	U	--	28	U
2-Methylphenol	95-48-7	ug/kg	--	720	U	--	120	U
4-Methylphenol	106-44-5	ug/kg	--	210	U	--	32	U
Pentachlorophenol	87-86-5	ug/kg	--	420	U	--	65	U
Phenol	108-95-2	ug/kg	--	230	U	--	40	J
Phthalates								
Dimethyl phthalate	131-11-3	ug/kg	--	69	U	--	11	U
Diethyl phthalate	84-66-2	ug/kg	--	130	U	--	20	U
Diethyl phthalate	84-74-2	ug/kg	--	220	U	--	34	U
Butylbenzyl phthalate	85-68-7	ug/kg	--	190	U	--	200	U
Di-n-octyl phthalate	117-84-0	ug/kg	--	180	U	--	28	U
Bis(2-ethylhexyl) phthalate	117-81-7	ug/kg	--	720	U	--	120	J
Pesticides								
2,4'-DDD	53-19-0	ug/kg	2.6	NJ	5.1	NJ	0.0822	J
2,4'-DDE	3424-82-6	ug/kg	1.2	U	6.2	U	0.0317	J
2,4'-DDT	789-02-6	ug/kg	2.7	U	5.3	U	0.108	U
4,4'-DDD	72-54-8	ug/kg	1.5	J	1.4	J	0.478	U
4,4'-DDE	72-55-9	ug/kg	8.1	--	13	--	5.33	U
4,4'-DDT	50-29-3	ug/kg	10	--	15	--	0.578	U
Total of 4,4'-DDD, -DDE, -DDT	PP_DDT3ISO	ug/kg	19.6	JT	29.4	JT	6.39	T
Aldrin	309-00-2	ug/kg	0.55	U	0.16	U	0.000169	U
alpha-Hexachlorocyclohexane	319-84-6	ug/kg	0.35	U	0.34	U	0.0165	J
beta-Hexachlorocyclohexane	319-85-7	ug/kg	0.34	U	0.37	U	0.00892	U
delta-Hexachlorocyclohexane	319-86-8	ug/kg	0.44	J	0.51	U	0.0014	U
gamma-Hexachlorocyclohexane	58-89-9	ug/kg	0.19	U	0.18	U	0.0221	U
cis-Chlordane	5103-71-9	ug/kg	0.23	J	0.26	J	0.267	U
trans-Chlordane	5103-74-2	ug/kg	2.4	--	4	--	0.151	J
Oxychlordane	27304-13-8	ug/kg	0.42	U	0.41	U	0.58	U
cis-Nonachlor	5103-73-1	ug/kg	1.1	U	1.1	U	0.244	U
trans-Nonachlor	39765-80-5	ug/kg	0.84	J	0.76	J	1.02	U

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Table 4-1. Analytical Results for Stomach Content and Fish Tissue Samples.

Analysis/Analyte	CAS #	Sample ID Sample Date/Time	LW2-T03-REP2	LW2-T03-REP3	LW2-T04 SC	LW2-T04-REP1	LW2-T04-REP2	LW2-T04-REP3
			X Coordinate	Y Coordinate	5/12/05 16:25 7637229.949 694088.1142	5/12/05 17:30 7637229.949 694088.1142	5/12/05 1:45 7649272.819 657288.3127	5/12/05 14:35 7649272.819 657288.3127
Dieldrin	60-57-1	ug/kg	0.55	U	1.1	U	0.905	0.65
alpha-Endosulfan	959-98-8	ug/kg	0.19	U	0.18	U	0.449	1.1
beta-Endosulfan	33213-65-9	ug/kg	0.26	U	1.1	U	0.25	0.26
Endosulfan sulfate	1031-07-8	ug/kg	0.21	UJ	0.2	UJ	0.891	0.34
Endrin	72-20-8	ug/kg	1.1	U	1.1	U	0.00503	J
Endrin aldehyde	7421-93-4	ug/kg	0.19	U	1.1	U	0.0224	0.14
Endrin ketone	53494-70-5	ug/kg	1.1	U	1.5	U	0.0015	0.61
Heptachlor	76-44-8	ug/kg	1.2		0.76	J	0.0025	0.33
Heptachlor epoxide	1024-57-3	ug/kg	1.5		2		0.11	0.36
Methoxychlor	72-43-5	ug/kg	1.1	U	1.2	U	0.0545	0.34
Toxaphene	8001-35-2	ug/kg	180	U	230	U	--	24
								U
								38
								36
								U
Dioxins_Furans								
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	pg/g	0.252		0.354	U	--	0.153
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321-76-4	pg/g	0.657	J	1.06	J	--	0.301
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227-28-6	pg/g	0.345	J	0.429	J	--	0.082
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653-85-7	pg/g	1.58		2.69		--	0.317
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	pg/g	0.491	J	0.759	J	--	0.084
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822-46-9	pg/g	6.41		7.38		--	0.726
2,3,7,8-Tetrachlorodibenzofuran	51207-31-9	pg/g	0.312		0.541		--	0.21
1,2,3,7,8-Pentachlorodibenzofuran	57117-41-6	pg/g	0.077	J	0.254	J	--	0.054
2,3,4,7,8-Pentachlorodibenzofuran	57117-31-4	pg/g	0.271	J	0.606	J	--	0.137
1,2,3,4,7,8-Hexachlorodibenzofuran	70648-26-9	pg/g	0.14	J	0.215	J	--	0.054
1,2,3,6,7,8-Hexachlorodibenzofuran	57117-44-9	pg/g	0.111	J	0.165	J	--	0.054
1,2,3,7,8,9-Hexachlorodibenzofuran	72918-21-9	pg/g	0.0551	U	0.0577	U	--	0.054
2,3,4,6,7,8-Hexachlorodibenzofuran	60851-34-5	pg/g	0.166	J	0.211	J	--	0.071
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562-39-4	pg/g	0.759	J	0.721	J	--	0.14
1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673-89-7	pg/g	0.075	U	0.063	J	--	0.054
								U
								0.0561
								U
								0.0537
Dioxin_Furan_Homolog								
Tetrachlorodibenzo-p-dioxin homologs	41903-57-5	pg/g	0.252		0.0577	U	--	0.054
Pentachlorodibenzo-p-dioxin homologs	36088-22-9	pg/g	0.727		1.12		--	0.301
Hexachlorodibenzo-p-dioxin homologs	34465-46-8	pg/g	3.11		4.57		--	0.25
Heptachlorodibenzo-p-dioxin homologs	37871-00-4	pg/g	8.42		9.44		--	1.02
Octachlorodibenzo-p-dioxin	3268-87-9	pg/g	15.7		18.3		--	1.18
Tetrachlorodibenzofuran homologs	30402-14-3	pg/g	0.473		0.554		--	0.212
Pentachlorodibenzofuran homologs	30402-15-4	pg/g	1.96		1.39		--	0.206
Hexachlorodibenzofuran homologs	55684-94-1	pg/g	1.85		1.83		--	0.212
Heptachlorodibenzofuran homologs	38998-75-3	pg/g	2.07		1.63		--	0.263
Octachlorodibenzofuran	39001-02-0	pg/g	1.57	J	1	J	--	0.245
								J
								0.243
								J
Aroclors								
Aroclor 1016	12674-11-2	ug/kg	0.000999	U	0.000964	U	0.00112	U
Aroclor 1221	11104-28-2	ug/kg	0.00034	U	0.000343	U	0.000581	U
Aroclor 1232	11141-16-5	ug/kg	0.000288	U	0.000317	U	0.000761	U
Aroclor 1242	53469-21-9	ug/kg	6.14	NJ	9.31	NJ	0.87	NJ
Aroclor 1248	12672-29-6	ug/kg	0.00653	U	0.0112	U	0.00111	U
								0.00225
								U
								0.00299
								U
								0.00277
								U

Table 4-1. Analytical Results for Stomach Content and Fish Tissue Samples.

Analysis/Analyte	CAS #	Sample ID Sample Date/Time	LW2-T03-REP2	LW2-T03-REP3	LW2-T04 SC	LW2-T04-REP1	LW2-T04-REP2	LW2-T04-REP3								
			X Coordinate	Y Coordinate	Units	5/12/05 16:25	5/12/05 17:30	5/12/05 1:45								
Aroclor 1254	11097-69-1	ug/kg	32.1	NJ	64	NJ	4.87	NJ	5.98	NJ	10.3	NJ	7.87	NJ		
Aroclor 1260	11096-82-5	ug/kg	103	NJ	126	NJ	3.43	NJ	5.45	NJ	9.14	NJ	6.54	NJ		
Total Aroclors	12767-79-2	ug/kg	141	JT	199	JT	7637229.949	7637229.949	7649272.819	657288.3127	12.1	JT	20.4	JT	15.2	JT
PCB Congeners																
PCB001	2051-60-7	pg/g	26.2		24.1		8.67		7.43		7.81		7.68			
PCB002	2051-61-8	pg/g	1.26		1.22		1.47	U	0.598		0.649		0.586			
PCB003	2051-62-9	pg/g	5.17		4.74		3.65		1.69		1.92		1.8			
PCB004	13029-08-8	pg/g	196		214		30.6		31.4		34.1		33.3			
PCB005	16605-91-7	pg/g	4.68		6.43		1.2	U	0.726		0.823	U	0.805	U		
PCB006	25569-80-6	pg/g	66.5		87.3		9.13		6.97		7.57		6.86			
PCB007	33284-50-3	pg/g	9.83		11.7		2.57		1.51		1.61		1.56			
PCB008	34883-43-7	pg/g	254		341		40.4		30.6		32.9		29.8			
PCB009	34883-39-1	pg/g	17		21.1		3.54		2.49		2.66		2.48			
PCB010	33146-45-1	pg/g	5.36		5.64		1.25		1.2		1.21		1.19			
PCB011	2050-67-1	pg/g	5.02		5.61		334		46.8		24.7		29.7			
PCB012 & 013	PCB012_013	pg/g	3.3		3.71		2.6		1.28	U	1.05		0.853	J		
PCB014	34883-41-5	pg/g	0.569	U	0.596	U	1.15	U	0.558	U	0.58	U	0.555	U		
PCB015	2050-68-2	pg/g	27.2		31.3		17.3		4.41		4.85		4.31			
PCB016	38444-78-9	pg/g	98.4		136		14.6		8.98		10.6		9.8			
PCB017	37680-66-3	pg/g	300		380		24.6		16.2		21.9		18.7			
PCB018 & 030	PCB018_030	pg/g	297		424		39.5		28.6		34.5		32			
PCB019	38444-73-4	pg/g	115		158		5.23		5.53		7.48		5.89			
PCB020 & 028	PCB020_028	pg/g	915		1470		129		99.6		158		122			
PCB021 & 033	PCB021_033	pg/g	237		367		21.8		15.7		23.3		18.7			
PCB022	38444-85-8	pg/g	148		243		20.6		11.9		15.6		12.9			
PCB023	55720-44-0	pg/g	0.432	J	0.787	U	1.21	U	0.0965	U	0.08	J	0.103	J		
PCB024	55702-45-9	pg/g	4.51		6.11		0.462	U	0.567		0.579		0.503			
PCB025	55712-37-3	pg/g	73.4		99.6		6.95		4.62		6.4		5.39			
PCB026 & 029	PCB026_029	pg/g	147		208		15.5		12.3		19.9		14.8			
PCB027	38444-76-7	pg/g	35.4		51.7		2.93		2.32		3.14		2.66			
PCB031	16606-02-3	pg/g	582		869		81		56.6		77.7		68.7			
PCB032	38444-77-8	pg/g	169		242		14.9		10.9		15.6		11.9			
PCB034	37680-68-5	pg/g	2.16		3.45		0.421	J	0.333	J	0.527		0.489			
PCB035	37680-69-6	pg/g	0.687	U	0.719	U	2.51		0.107	U	0.699	U	0.0673	U		
PCB036	38444-87-0	pg/g	0.536	U	0.561	U	1.63		0.0948	U	0.0669	U	0.061	J		
PCB037	38444-90-5	pg/g	49.8		92.8		26.1		5.34		6.98		6.56			
PCB038	53555-66-1	pg/g	0.623		1.25	U	0.223	U	0.206	U	0.225	U	0.218	U		
PCB039	38444-88-1	pg/g	3.11		5.48		0.796	J	0.784		1.18		0.822			
PCB040 & 041 & 071	PCB040_041_071	pg/g	456		722		44.4		45.6		90.8		66.2			
PCB042	36559-22-5	pg/g	143		273		36.2		20.4		40.9		33.3			
PCB043	70362-46-8	pg/g	17.9		29		2.52		3.84		6.87		5.33			
PCB044 & 047 & 065	PCB044_047_065	pg/g	2800		3660		166		156		296		215			
PCB045 & 051	PCB045_051	pg/g	562		789		12.6		11.2		20.4		14.9			
PCB046	41464-47-5	pg/g	19.9		32.5		3.01		1.78		3.45		2.64			
PCB048	70362-47-9	pg/g	103		172		19.6		17.4		34.8		26.3			
PCB049 & 069	PCB049_069	pg/g	1560		2230		126		103		206		150			
PCB050 & 053	PCB050_053	pg/g	318		512		12.2		9.98		19.3		13.5			
PCB052	35693-99-3	pg/g	1350		2560		241		209		403		275			

Table 4-1. Analytical Results for Stomach Content and Fish Tissue Samples.

Analysis/Analyte	CAS #	Sample ID Sample Date/Time	LW2-T03-REP2 5/12/05 16:25	LW2-T03-REP3 5/12/05 17:30	LW2-T04 SC 5/12/05 1:45	LW2-T04-REP1 5/12/05 13:35	LW2-T04-REP2 5/12/05 1:45	LW2-T04-REP3 5/12/05 14:35
		X Coordinate Y Coordinate Units	7637229.949 694088.1142	7637229.949 694088.1142	7649272.819 657288.3127	7649272.819 657288.3127	7649272.819 657288.3127	7649272.819 657288.3127
PCB054	15968-05-5	pg/g	40.1	81.6	0.54	U	0.744	1.64
PCB055	74338-24-2	pg/g	18.9	29.7	2.77		3.74	6.83
PCB056	41464-43-1	pg/g	93.5	206	46.7		14.5	26.8
PCB057	70424-67-8	pg/g	3.82	6.6	0.587	J	0.77	1.28
PCB058	41464-49-7	pg/g	1.25	5.4	0.514	J	0.671	1.34
PCB059 & 062 & 075	PCB059_062_075	pg/g	82.5	129	11.6		11.8	21
PCB060	33025-41-1	pg/g	184	348	45		43.5	86
PCB061 & 070 & 074 & 076	PCB061_070_074_-	pg/g	1440	2610	370		342	610
PCB063	74472-34-7	pg/g	43.5	75.3	11.2		10.6	21.6
PCB064	52663-58-8	pg/g	286	541	73.9		65.9	125
PCB066	32598-10-0	pg/g	974	1870	251		243	444
PCB067	73575-53-8	pg/g	31.6	50	4		2.97	5.36
PCB068	73575-52-7	pg/g	35	41.7	3.28		3.01	4.81
PCB072	41464-42-0	pg/g	24.4	34.8	3.1		3.28	6.11
PCB073	74338-23-1	pg/g	34.6	49.9	0.679	U	1.29	2.08
PCB077	32598-13-3	pg/g	53.9	96.9	17.4		13.2	20.4
PCB078	70362-49-1	pg/g	1.15	U	1.97	U	0.908	U
PCB079	41464-48-6	pg/g	27.7	62.7	4.32		5.86	10.6
PCB080	33284-52-5	pg/g	1.61	U	1.76	U	1.57	U
PCB081	70362-50-4	pg/g	5.18	U	10.8	U	0.712	U
PCB082	52663-62-4	pg/g	138	365	33.5		34.4	70.4
PCB083 & 099	PCB083_099	pg/g	2600	4670	358		438	731
PCB084	52663-60-2	pg/g	184	474	45.8		42.2	90.1
PCB085 & 116 & 117	PCB085_116_117	pg/g	451	1070	113		135	230
PCB086 & 087 & 097 & 108 & 119 & 125	PCB086_087_097_-	pg/g	1410	3340	251		309	559
PCB088 & 091	PCB088_091	pg/g	721	1140	46.4		46.5	95.1
PCB089	73575-57-2	pg/g	8.89	19.3	1.66		1.97	4.52
PCB090 & 101 & 113	PCB090_101_113	pg/g	4170	8060	483		567	1020
PCB092	52663-61-3	pg/g	805	1430	77.2		101	173
PCB093 & 095 & 098 & 100 & 102	PCB093_095_098_-	pg/g	2110	3810	202		227	438
PCB094	73575-55-0	pg/g	46.8	48.2	0.989		1.22	U
PCB096	73575-54-9	pg/g	35.8	56.5	0.853	J	0.837	1.81
PCB103	60145-21-3	pg/g	165	192	2.72		3.02	6.02
PCB104	56558-16-8	pg/g	9.73	17.2	0.119	J	0.176	U
PCB105	32598-14-4	pg/g	780	1930	224		297	503
PCB106	70424-69-0	pg/g	2.79	U	2.21	U	1.11	U
PCB107 & 124	PCB107_124	pg/g	78.4	186	19.6		20.4	31.4
PCB109	74472-35-8	pg/g	245	438	48.9		60.3	102
PCB110 & 115	PCB110_115	pg/g	2170	5110	440		542	914
PCB111	39635-32-0	pg/g	14.2	15.5	0.409	U	0.895	U
PCB112	74472-36-9	pg/g	1.86	U	2.52	U	0.976	U
PCB114	74472-37-0	pg/g	49.6	108	14.7		18.6	33.8
PCB118	31508-00-6	pg/g	2500	5880	631		833	1430
PCB120	68194-12-7	pg/g	61.6	67.1	2.73		4.14	5.69
PCB121	56558-18-0	pg/g	18.1	20.9	0.414	U	0.895	U
PCB122	76842-07-4	pg/g	6.94	16.3	5.2		2.62	4
PCB123	65510-44-3	pg/g	42.5	102	12.9		17.2	27.8
PCB126	57465-28-8	pg/g	11.9	19.6	2.84		3.12	4.02
PCB127	39635-33-1	pg/g	7.11	15.5	1.02	U	2.02	2.76

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Table 4-1. Analytical Results for Stomach Content and Fish Tissue Samples.

Analysis/Analyte	CAS #	Sample ID Sample Date/Time	LW2-T03-REP2 5/12/05 16:25	LW2-T03-REP3 5/12/05 17:30	LW2-T04 SC 5/12/05 1:45	LW2-T04-REP1 5/12/05 13:35	LW2-T04-REP2 5/12/05 1:45	LW2-T04-REP3 5/12/05 14:35
		X Coordinate Y Coordinate						
		Units						
PCB128 & 166	PCB128_166	pg/g	784	1500	105	157	260	188
PCB129 & 138 & 160 & 163	PCB129_138_160_	pg/g	11900	18200	856	1230	2000	1490
PCB130	52663-66-8	pg/g	462	741	49.3	65	112	81.5
PCB131	61798-70-7	pg/g	30.7	68.5	4.14	4.31	9.25	5.75
PCB132	38380-05-1	pg/g	1460	2490	110	144	276	179
PCB133	35694-04-3	pg/g	351	386	15.8	20.5	34.4	25.2
PCB134 & 143	PCB134_143	pg/g	270	430	16.3	23.7	42.6	29.8
PCB135 & 151 & 154	PCB135_151_154	pg/g	3970	5030	151	203	334	234
PCB136	38411-22-2	pg/g	568	878	33.3	34.4	65.6	40.1
PCB137	35694-06-5	pg/g	168	357	35.3	43	80.9	62
PCB139 & 140	PCB139_140	pg/g	133	176	10.6	13.2	24.3	18.7
PCB141	52712-04-6	pg/g	2250	3180	99.8	138	251	167
PCB142	41411-61-4	pg/g	4.11	U	4.8	U	0.915	0.566
PCB144	68194-14-9	pg/g	351	536	17.4	24.1	47.9	31.1
PCB145	74472-40-5	pg/g	0.627	1.53	0.122	U	0.109	J
PCB146	51908-16-8	pg/g	3060	3670	171	209	350	252
PCB147 & 149	PCB147_149	pg/g	8870	13000	466	588	985	656
PCB148	74472-41-6	pg/g	87.9	82.1	1.14	U	1.53	2.88
PCB150	68194-08-1	pg/g	66.3	68.6	0.497	U	0.875	1.7
PCB152	68194-09-2	pg/g	17.7	16.8	0.105	U	0.214	J
PCB153 & 168	PCB153_168	pg/g	15800	22000	842	1270	2120	1590
PCB155	33979-03-2	pg/g	5.89	6.51	0.488	J	0.913	1.12
PCB156 & 157	PCB156_157	pg/g	564	1070	83.8	111	196	147
PCB158	74472-42-7	pg/g	802	1270	73.4	96.1	173	122
PCB159	39635-35-3	pg/g	148	177	4.34	U	8.46	12.9
PCB161	74472-43-8	pg/g	2.95	U	3.44	U	0.503	U
PCB162	39635-34-2	pg/g	26	40.6	4.3	4.93	7.67	6.05
PCB164	74472-45-0	pg/g	628	897	42.1	60.6	93.1	64.5
PCB165	74472-46-1	pg/g	25.8	27	0.36	U	0.856	1.35
PCB167	52663-72-6	pg/g	314	526	36.2	46.1	77.2	57.9
PCB169	32774-16-6	pg/g	17.9	U	17.7	U	0.316	U
PCB170	35065-30-6	pg/g	4490	5580	149	237	399	279
PCB171 & 173	PCB171_173	pg/g	1050	1320	37.9	56.5	101	64.8
PCB172	52663-74-8	pg/g	888	1060	35.9	50.1	82.5	59
PCB174	38411-25-5	pg/g	3580	4180	103	170	266	172
PCB175	40186-70-7	pg/g	161	201	6.84	8.98	16.2	10.9
PCB176	52663-65-7	pg/g	272	356	9.6	14.1	28	16
PCB177	52663-70-4	pg/g	3120	3430	85.7	148	249	160
PCB178	52663-67-9	pg/g	1190	1290	44.7	65.3	100	73.6
PCB179	52663-64-6	pg/g	1090	1300	43	51.8	84	53.5
PCB180 & 193	PCB180_193	pg/g	12700	15600	424	673	1120	825
PCB181	74472-47-2	pg/g	17.6	25.4	1.43	U	2.12	U
PCB182	60145-23-5	pg/g	45.4	43.8	1.37	2.43	3.2	2.33
PCB183 & 185	PCB183_185	pg/g	3350	4050	114	180	305	205
PCB184	74472-48-3	pg/g	3.19	3.47	0.707	J	0.926	1.35
PCB186	74472-49-4	pg/g	0.182	J	0.423	U	0.986	U
PCB187	52663-68-0	pg/g	7840	9700	394	538	724	527
PCB188	74487-85-7	pg/g	23.1	22.7	0.542	J	0.687	1.09
PCB189	39635-31-9	pg/g	147	181	6.74	8.98	15.2	11.2

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Table 4-1. Analytical Results for Stomach Content and Fish Tissue Samples.

Analysis/Analyte	CAS #	Sample ID Sample Date/Time	LW2-T03-REP2	LW2-T03-REP3	LW2-T04 SC	LW2-T04-REP1	LW2-T04-REP2	LW2-T04-REP3
			X Coordinate	Y Coordinate	Units	5/12/05 16:25	5/12/05 17:30	5/12/05 1:45
PCB190	41411-64-7	pg/g	991	1180		35.4	55.6	90.2
PCB191	74472-50-7	pg/g	180	221		6.6	9.9	17.5
PCB192	74472-51-8	pg/g	1.14	U	1.19	2.29	U	1.16
PCB194	35694-08-7	pg/g	1950		2360	78.4	100	166
PCB195	52663-78-2	pg/g	768		916	25.6	36.4	61.7
PCB196	42740-50-1	pg/g	967		1190	37.4	47.1	87.9
PCB197 & 200	PCB197_200	pg/g	205		251	9.66	11	19.4
PCB198 & 199	PCB198_199	pg/g	2150		2600	132	139	219
PCB201	40186-71-8	pg/g	198		249	10.4	11.6	21.7
PCB202	2136-99-4	pg/g	355		428	30.5	32.1	45
PCB203	52663-76-0	pg/g	1360		1760	82	92.3	149
PCB204	74472-52-9	pg/g	0.471		0.777	0.156	U	0.133
PCB205	74472-53-0	pg/g	110		120	4.07	5.91	9.24
PCB206	40186-72-9	pg/g	374		476	44.8	43.2	62.6
PCB207	52663-79-3	pg/g	45.9		66.8	5.12	5.03	8.15
PCB208	52663-77-1	pg/g	87.8		124	15.7	16.2	21.4
PCB209	2051-24-3	pg/g	31.9		65.8	22.6	21.5	22
Total PCB Congeners	1336-36-3	pg/g	136000		198000	10600	12800	21600
PCB Homologs								
Monochlorobiphenyl	27323-18-8	pg/g	32.7		30	13.8	9.72	10.4
Dichlorobiphenyl	25512-42-9	pg/g	589		728	442	126	111
Trichlorobiphenyl	25323-68-6	pg/g	3180		4750	408	280	404
Tetrachlorobiphenyl	26914-33-0	pg/g	10700		17200	1510	1340	2520
Pentachlorobiphenyl	25429-29-2	pg/g	18800		38600	3020	3700	6480
Hexachlorobiphenyl	26601-64-9	pg/g	53100		76700	3220	4500	7560
Heptachlorobiphenyl	28655-71-2	pg/g	41100		49700	1500	2270	3610
Octachlorobiphenyl	55722-26-4	pg/g	8050		9880	410	476	779
Nonachlorobiphenyl	53742-07-7	pg/g	507		667	65.6	64.5	92.2
Total PCB Homologs		pg/g	136059		198255	10589	12766	21567

Notes:

For all totals, zero is always used for non-detects. If any of the values going into a total are estimated (J qualified), then the total value is estimated (J qualified). If all analytes in a total are non-detects, then the highest detection limit is used for the total. A "T" qualifier is added to all results that are mathematically derived.

SC in sample name indicates stomach content, all other samples are whole-body tissue.

Coordinate system for geographic coordinates is Oregon State Plane NAD83 HARN/HPGN, Intl. Feet.

-- No data

J = Estimate

JT= Combined qualifier

N = Presumptive evidence of a compound

NJ = Combined qualifier

NJT = combined qualifier

T = Value is an average or selected value (see Kennedy Jenks et al. 2004)

U = Not detected at value shown

UI = Combined qualifier

UJT = combined qualifier

UT = combined qualifier

Table 4-2. Taxonomical Results of Stomach Content Samples.

Taxonomical Group ¹	Number of Prey Organisms																			
	LW2-T01 ²						LW2-T02 ³						LW2-T04 ²							
	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7	Sample 8	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6
Ephemeroptera																				
Coleoptera	Baetidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	2	0
	Carabidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
	Chrysomelidae	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Coccinellidae	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
	Coleoptera	2	4	0	1	2	0	0	0	1	0	0	0	0	0	13	0	50	0	41
Diptera	Hydrophilidae	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
	Chironomidae	3	5	12	0	7	4	0	7	4	5	0	5	13	0	0	0	0	3	0
	Brachycera	0	0	0	0	0	0	0	3	0	1	0	0	0	0	0	1	0	0	0
	Ceratopogonidae	0	0	0	0	0	0	0	0	2	0	0	0	0	1	0	0	0	0	0
	Diptera	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Trichoptera	Empididae	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
	Ephydriidae	0	0	0	0	0	0	0	9	0	0	0	0	2	0	0	0	0	0	0
	Muscomorpha	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	Nematocephala	0	0	0	0	0	0	0	0	3	0	2	0	8	15	0	12	1	0	5
	Psychodidae	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Other Insecta	Simuliidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
	Trichoptera	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	Aphididae	2	1	0	0	1	0	0	0	0	0	1	1	1	1	0	1	0	0	2
	Chalcidoidea	0	0	0	0	0	0	0	1	0	0	0	1	1	1	0	0	0	0	0
	Cicadellidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
Annelida	Collembola	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0
	Entomobryidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14
	Forficulidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	1
	Formicidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	2
	Homoptera	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2
Crustacea	Hymenoptera	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
	Ichneumonidae	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
	Psocoptera	0	0	0	0	0	0	0	0	0	0	1	1	1	6	3	0	8	0	2
	Psyllidae	0	0	0	0	0	0	0	0	0	0	1	0	2	2	0	0	0	0	1
	Raphidiidae	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
Other Organisms	Sminthuridae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	3
	Thripidae	0	0	0	0	0	0	0	1	0	0	0	2	2	1	0	0	0	0	0
	Oligochaeta	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
Other Organisms	Cladocera	0	0	0	0	0	0	0	0	358	0	0	61	0	0	42	0	11	30	19
	Araneae	0	1	0	0	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	Nematoda	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	2

Notes:¹ The developmental stages of the insects identified in all stomach contents samples were 73% larvae, 2% pupae, and 25% adults.² Samples collected 5/10/05.³ Samples collected 5/12/05.



PORTRLAND HARBOR RI/FS

ROUND 2 SUBYEARLING CHINOOK TISSUE DATA REPORT

DRAFT

APPENDIX B DATA QUALITY SUMMARY



March 31, 2006

Prepared for

The Lower Willamette Group

Prepared by

Integral Consulting Inc.

Windward Environmental LLC

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LIST OF ACRONYMS

ACG	analytical concentration goal
EPA	U.S. Environmental Protection Agency
LWG	Lower Willamette Group
MDL	method detection limit
MRL	method reporting limit
NOAA	National Oceanic and Atmospheric Administration
PAHs	polycyclic aromatic hydrocarbons
PARCC	precision, accuracy, representativeness, completeness, comparability
PCB	polychlorinated biphenyl
PCDD/F	polychlorinated dibenzo- <i>p</i> -dioxin/furan
QA/QC	quality assurance/quality control
QAPP	quality assurance project plan
RDL	reported detection limit
SOP	standard operating procedure
SVOCs	semivolatile organic compounds

1. INTRODUCTION

This report summarizes the data quality of the Round 2 subyearling chinook tissue samples collected during the May 10 through May 12, 2005 sampling event. Samples were collected and analyzed for organic, inorganic, and physical parameters according to the sample preparation and analytical procedures in the Round 2 Quality Assurance Project Plan (QAPP), QAPP Addendum 4: Subyearling Chinook Tissue Collection, and the Supplement to QAPP Addendum 4 (Integral and Windward 2004, Integral 2005a,b).

The laboratory methods of analysis for the surface, subsurface, and beach sediment samples are included in Table B-1. Where sufficient tissue mass was available, whole-body tissue samples were analyzed for metals, lipids, butyltin compounds, organochloride pesticides, polycyclic aromatic hydrocarbons (PAHs), semivolatile organic compounds (SVOCs), dioxins and furans, and polychlorinated biphenyl (PCB) congeners (full list of 209 congeners). Composited stomach contents were analyzed for organochlorine pesticides, PCB congeners (full list of 209 congeners), and PAHs. The analyses were conducted by the following laboratories (Table B-1):

- Axs Analytical Services, Ltd. (Sydney, B.C., Canada) performed the sample homogenization of the stomach content samples and conducted the analyses for dioxins and furans and PCB congeners (full list of 209 congeners) in whole-body tissue, and organochlorine pesticides, PCB congeners, and PAHs in stomach contents.
- Columbia Analytical Services (Kelso, Washington) conducted the sample homogenization and the analyses for percent lipids, percent moisture, total metals, butyltin compounds, organochlorine pesticides, and SVOCs in whole-body tissue.

Laboratory methods for whole-body and stomach content samples are summarized in Table B-1. The sample analyses were conducted according to the Round 2 QAPP and QAPP Addendum 4: Subyearling Chinook Tissue Collection. Deviations from the QAPP are noted in Section 3.6 of the main report.

2. DATA QUALITY AND USABILITY

Data generated in the field and at the laboratories were verified and validated according to the criteria and procedures described in the Round 2 QAPP (Integral and Windward 2004). Data quality and usability were evaluated based on the results of the data validation and the data quality objectives for the Round 2 subyearling chinook tissue data. The performance criteria in the QAPP included project analytical goals for precision, accuracy, representativeness, completeness, and comparability (PARCC) of the Round 2 data.

The precision, accuracy, representativeness, and comparability of the data were assessed during data validation, as described in the *Data Validation* section below and in the Round 2 QAPP. Completeness is calculated by comparing the total number of acceptable data (nonrejected data) to the total number of data points generated. Completeness for the Round 2 subyearling chinook tissue data is summarized by parameter group in Table B-2. Completeness was 100 percent for all parameter groups.

2.1. DATA VALIDATION

Data validation was conducted as required by the Round 2 QAPP and is summarized in Section 3.3 of the main report. The inorganic, organic, PCB congener, and polychlorinated dibenzo-*p*-dioxin/furan (PCDD/F) data were validated in accordance with guidance specified by the *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic and Organic Data Review*, by U.S Environmental Protection Agency (EPA) Region 10 standard operating procedures (SOPs) for validation of PCB congener data and PCDD/F data (EPA 1994a, 1995, 1996, 1999a), and by *Guidance on Environmental Data Verification and Validation* (EPA 2002). Modifications were made to the Functional Guidelines to accommodate quality assurance/quality control (QA/QC) requirements of the non-Contract Laboratory Program methods that were used for this project.

Data validation was completed by EcoChem (Seattle, Washington). Approximately 10% of the data for each laboratory method were fully validated, as described in the Round 2 QAPP. Validation for the remaining data was based on review of the summary forms for sample and QC data. The following deliverables were reviewed during Level 3 and full data validation:

- The case narrative discussing analytical problems (if any) and procedures
- Chain-of-custody documentation and laboratory sample receipt logs
- Instrument calibration results
- Method blank results
- Results for laboratory quality control samples required by the referenced method including laboratory control sample/laboratory control sample duplicate

analyses, matrix spike/matrix spike duplicate analyses, surrogate recoveries, and other method specific quality control samples (e.g., serial dilutions for inductively coupled plasma analyses)

- Results for field quality control samples (i.e., equipment blanks, field duplicates, and field split samples)
- Analytical results for the tissue samples.

In addition to review and assessment of the documentation identified above, full validation included verification of reported concentrations of the results for field samples and QC samples, verification of intermediate transcriptions, and review of instrument data, such as mass spectra, to verify analyte identification procedures.

Data qualifiers were assigned during data validation if applicable control limits were not met, in accordance with the EPA data validation guidelines (EPA 1994a, 1995, 1996, 1999a) and the quality control requirements included in the referenced methods. The quality control limits for surrogate spikes, matrix spike/matrix spike duplicate samples, laboratory control samples, and ongoing precision and recovery for the Round 2 laboratories are summarized in Tables B-3 and B-4. The data validation qualifiers and definitions are summarized in Table B-5. Data quality reports and a tabular summary of qualified data generated by EcoChem are included in Appendix C of the main body of this report.

2.2. DATA QUALITY

The EcoChem data validation reports (Appendix C of main body) provide detailed information on the data quality issues and data validation qualifiers for each parameter group for each laboratory data package. A summary of the qualified data by parameter group, with the reasons for qualification, is included in Table B-6. A table of qualified data for the Round 2 subyearling chinook tissue is included in Appendix A of the main body of this report (provided on CD). This table includes original laboratory qualifiers, final qualifiers applied after validation, and reason codes for the qualifiers. A table of definitions for the qualifier reason codes is also provided in Appendix A.

The discussion below includes a comparison of the detection limits to the analyte concentration goals (ACGs) specified in QAPP Addendum 4 (Integral 2005a), followed by a summary of the qualified data for each parameter group and any limitations to the usability of the data.

2.2.1. Analytical Concentration Goals and Reported Detection Limits

Tissue data for Round 2 of the Portland Harbor RI/FS were reported to the method detection limit (MDL) in most cases. Sample-specific detection limits were reported for PCB congeners and PCDD/Fs, as specified in the respective method protocols (EPA methods 1668A and 1613B; EPA 1999b, 1994b). These detection limits are based on

the signal-to-noise ratio of the analytical system for each analyte and sample. MDLs and method reporting limits (MRLs) were elevated because of matrix interference or when results were restated as undetected during data validation because of possible sample contamination, as indicated by the presence of target analytes in an associated method blank or equipment blank.

The reported detection limit (RDL) is the collective term for the detection limit or reporting limit used to quantify nondetects, as applicable to each sample and analyte. Table B-7 provides the ACGs and MRLs included in the Round 2 QAPP Addendum 4 (Integral 2005a) and the minimum and maximum RDL attained by the laboratories for each analyte. Because of the limited tissue mass available for analysis, elevated detection limits were expected for selected parameter groups for the tissue samples where the subsample mass was reduced (Table B-8). Generally, for the results that were generated using the subsample mass identified in the QAPP, the detection limits reported by the laboratories for the tissue samples were equal to or less than the detection limit goals established in the QAPP.

2.2.2. Field Quality Control Samples

Quality control samples were prepared in the field and at the laboratories to monitor the bias and precision of the sample collection and analysis procedures. Field QC samples for this study were limited to one rinsate blank for fish dissection equipment. Field replication was incorporated into the sampling design. Field splits were not collected because of fish catch limits.

Aluminum and phenanthrene were detected in the fish dissection rinsate blank. No data were qualified during validation because the concentrations in the samples were greater than the action level (5 times the blank concentration) determined from the concentrations in the dissection blank.

As noted in Section 3.4.1 of the main text, at Station T03, only 72 fish were collected. These fish were processed in the laboratory as they arrived from the field under the assumption that 90 fish would be collected. At the end of the field effort, the 72 fish were redistributed among the three replicates so that the whole-body weight in each replicate was close to 60 grams. The number of fish per replicate was 24, 21, and 27, respectively (see Table 3-3 in Integral and Windward 2005).

Field replicate samples were incorporated into the sampling design for the whole-body samples. For each station, the catch was divided into three sample replicates with an approximate weight of 60 grams each. The field replicate results for subyearling chinook whole-body tissue are summarized in Table B-9a. Stomach content samples were collected by the Lower Willamette Group (LWG) and National Oceanic and Atmospheric Administration (NOAA) at two stations. The results from both sampling events were compared, as field replicates, to assess the variability of the results. The field replicate results for the chinook stomach content samples are summarized in Table B-9b.

The comparability of the stomach content replicate results was assessed by calculating the relative percent difference of the stomach content results from the two sampling events conducted by LWG and NOAA. The results are generally comparable for composite tissue samples collected in separate sampling events, with the exception of PAHs at Station T02, where PAHs are consistently higher in the NOAA sample compared to the study sample. The comparability of the whole-body replicate samples was assessed by calculating the relative standard deviation of the three replicate results at each station. The whole-body samples were comparable for Stations T02, T03, and T04 for all parameter groups. The PCB congener results for Station T01 showed more variation than the PCB congener results for the other three stations. Overall, the precision of the results is acceptable.

2.2.2.1. Summary of Qualified Data

Selected data not meeting the data quality criteria were qualified as undetected, estimated, or tentatively identified during validation, in accordance with the QAPP. A summary of the qualified data by parameter group, including the reasons for qualification, is included in Table B-6. A complete list of qualified results with reason codes is provided in Appendix C (on CD). Data qualified as undetected are usable for all intended purposes. Data qualified as estimated or tentatively identified are usable for all intended purposes, with the knowledge that these data may be less precise or less accurate than unqualified data. Rejected data are not usable for any purpose and have been flagged as “not reportable” in the database. None of the laboratory data from the subyearling chinook tissue samples were rejected during validation.

The precision and accuracy of the Round 2 subyearling chinook tissue data was acceptable. The completeness of the Round 2 sediment data was 100% (see Table B-2). The Round 2 subyearling chinook tissue data are usable for all project purposes. Overall, the data quality was acceptable and will meet program objectives and goals for the remedial investigation and feasibility study.

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Table B-1. Laboratory Methods of Analysis for Chinook Tissue Samples.

Analysis	Laboratory	Sample Preparation		Quantitative Analysis	
		Protocol	Procedure	Protocol	Procedure
Organochlorine Pesticides¹ (Whole-body samples)	CAS	EPA 3540C EPA 3640A EPA 3620B	Soxhlet extraction Gel permeation chromatography Florisil® cleanup	EPA 8081A	GC/ECD
Lipids (Whole-body samples)	CAS	EPA 3540C ¹	Soxhlet extraction	CAS SOP	Balance
Butyltin Compounds (Whole-body samples)	CAS	Krone et al. 1988 Krone et al. 1988	Solvent extraction Derivatization	Krone et al. 1988	GC/FPD
Polycyclic Aromatic Hydrocarbons (Whole-body samples)	CAS	EPA 3540C EPA 3640A EPA 3620B	Soxhlet extraction Gel permeation chromatography Florisil® cleanup	EPA 8270C SIM	GC/MS SIM
Semivolatile Organic Compounds (Whole-body samples)	CAS	EPA 3540C EPA 3640A	Soxhlet extraction Gel permeation chromatography	EPA 8270C SIM	GC/MS SIM
Metals (Whole-body samples) Aluminum, antimony, arsenic, cadmium, copper, lead, nickel, silver, zinc	CAS	EPA 3050B/PSEP EPA 3050B/PSEP EPA 3050B/PSEP EPA 7742 EPA 7470	Acid digestion Acid digestion Acid digestion Hydride generation Acid digestion/oxidation	EPA 6020 EPA 6010B EPA 7742 EPA 7471A	ICP/MS ICP/AES AAS CVAA
Chromium Selenium					
Mercury					
Chlorinated Dioxins and Furans (Whole-body samples)	Axys	EPA 1613B	Soxhlet extraction Gel permeation chromatography Layered Acid/Base SiO ₃ column 1% deactivated basic Alumina Carbon celite	EPA 1613B	HRGC/HRMS

Table B-1. Laboratory Methods of Analysis for Chinook Tissue Samples.

Analysis	Laboratory	Sample Preparation		Quantitative Analysis	
		Protocol	Procedure	Protocol	Procedure
PCB Congeners (Whole-body samples and stomach content samples)	Axys	EPA 1668A	Soxhlet extraction Acid silica gel Layered Acid/Base silica gel 1% deactivated basic Alumina Florisil® cleanup	EPA 1668A	HRGC/HRMS
Organochlorine Pesticides¹ (Stomach content samples)	Axys	EPA 3540C EPA 3640A EPA 3620B	Soxhlet extraction Gel permeation chromatography Florisil® cleanup	Axys SOP	HRGC/HRMS
Polycyclic Aromatic Hydrocarbons (Stomach content samples)	Axys	EPA 3540C EPA 3640A EPA 3630C	Soxhlet extraction Gel permeation chromatography Silica gel cleanup	Axys SOP	HRGC/HRMS

Notes:

¹ A portion of the pesticide extract was used for lipids determination.

AAS - Atomic absorption spectrometry

CAS - Columbia Analytical Services

CVAA - cold vapor atomic absorption

EPA - U.S. Environmental Protection Agency

GC/ECD - gas chromatography/electron capture detection

GC/FPD - gas chromatography/flame photometric detection

GC/MS - gas chromatography/mass spectrometry

HRGC/HRMS - high resolution gas chromatography/high resolution mass spectrometry

ICP/AES - inductively coupled plasma/atomic emission spectrometry

ICP/MS - inductively coupled plasma - mass spectrometry

PSEP - Puget Sound Estuary Program

SIM - selected ion monitoring

SOP - standard operating procedure

Table B-2. Percent Completeness by Parameter Group.

Analysis	Total # of Data Points ¹	Number of Data Points		Completeness (%)
		Accepted	Rejected	
PCB Aroclors	126	126	0	100
Butyltins	44	44	0	100
Conventionals ²	24	24	0	100
PCB Congeners	2880	2880	0	100
PCB Homologs	162	162	0	100
Dioxin/furan homologs	120	120	0	100
Dioxin/furans	181	181	0	100
Metals	144	144	0	100
PAHs	306	306	0	100
Pesticides	480	480	0	100
Phenols	40	40	0	100
Phthalates	48	48	0	100
SVOCs	120	120	0	100
Round 2 Chinook Tissue Sampling Project Total	4675	4675	0	100

Notes:

¹ Totals include field replicates and split samples and exclude field blanks.

² Includes lipids and total solids.

Table B-3. Laboratory Control Limits for Chinook Tissue Surrogate Samples.

Analysis	Percent Recovery
Semivolatile Organic Compounds	
2-Fluoro-1,1'-biphenyl	10 - 146
Nitrobenzene-d5	44 - 129
p-Terphenyl-d14	53 - 136
Volatile Organic Compounds	
¹³ C-1,2,3-Trichlorobenzene	20 - 130
¹³ C-Hexachlorobenzene	20 - 150
Phenols	
2,4,6-Tribromophenol	38 - 160
Phenol-d6	10 - 144
Butyltins	
Tripropyltin hydride	10 - 160
PCB Congeners	
¹³ C-2,2',3,3',4,4',5,5',6,6'-Decachlorobiphenyl	25 - 150
¹³ C-2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl	25 - 150
¹³ C-2,2',3,3',4,4',5-Heptachlorobiphenyl	25 - 150
¹³ C-2,2',3,3',4,5,5',6,6'-Nonachlorobiphenyl	25 - 150
¹³ C-2,2',3,3',5,5',6,6'-Octachlorobiphenyl	25 - 150
¹³ C-2,2',3,3',5,5',6-Heptachlorobiphenyl	30 - 135
¹³ C-2,2',3,4,4',5,5'-Heptachlorobiphenyl	25 - 150
¹³ C-2,2',3,4',5,6,6'-Heptachlorobiphenyl	25 - 150
¹³ C-2,2',4,4',6,6'-Hexachlorobiphenyl	25 - 150
¹³ C-2,2',4,6,6'-Pentachlorobiphenyl	25 - 150
¹³ C-2,2',6,6'-Tetrachlorobiphenyl	25 - 150
¹³ C-2,2',6-Trichlorobiphenyl	25 - 150
¹³ C-2,2'-Dichlorobiphenyl	25 - 150
¹³ C-2,3,3',4,4',5,5',6-Octachlorobiphenyl	25 - 150
¹³ C-2,3,3',4,4',5,5'-Heptachlorobiphenyl	25 - 150
¹³ C-2,3,3',4,4'-Pentachlorobiphenyl	25 - 150
¹³ C-2,3,3',5,5'-Pentachlorobiphenyl	30 - 135
¹³ C-2,3',4,4',5,5'-Hexachlorobiphenyl	25 - 150
¹³ C-2,3',4,4',5'-Pentachlorobiphenyl	25 - 150
¹³ C-2,3',4,4',5-Pentachlorobiphenyl	25 - 150
¹³ C-2,3,4,4',5-Pentachlorobiphenyl	25 - 150
¹³ C-2,4,4'-Trichlorobiphenyl	30 - 135

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Table B-3. Laboratory Control Limits for Chinook Tissue Surrogate Samples.

Analysis	Percent Recovery
¹³ C-2-Chlorobiphenyl	15 - 150
¹³ C-3,3',4,4',5,5'-Hexachlorobiphenyl	25 - 150
¹³ C-3,3',4,4',5-Pentachlorobiphenyl	25 - 150
¹³ C-3,3',4,4'-Tetrachlorobiphenyl	25 - 150
¹³ C-3,4,4',5-Tetrachlorobiphenyl	25 - 150
¹³ C-3,4,4'-Trichlorobiphenyl	25 - 150
¹³ C-4,4'-Dichlorobiphenyl	25 - 150
¹³ C-4-Chlorobiphenyl	15 - 150
2,2',3,3',4,4',5,5',6,6'-Decachlorobiphenyl	10 - 178
PCB156L & 157L	25 - 150
Dioxin/Furans	
¹³ C-1,2,3,4,6,7,8-Heptachlorodibenzofuran	28 - 143
¹³ C-1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	23 - 140
¹³ C-1,2,3,4,7,8,9-Heptachlorodibenzofuran	26 - 138
¹³ C-1,2,3,4,7,8-Hexachlorodibenzofuran	26 - 152
¹³ C-1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	32 - 141
¹³ C-1,2,3,6,7,8-Hexachlorodibenzofuran	26 - 123
¹³ C-1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	28 - 130
¹³ C-1,2,3,7,8,9-Hexachlorodibenzofuran	29 - 147
¹³ C-1,2,3,7,8-Pentachlorodibenzofuran	24 - 185
¹³ C-1,2,3,7,8-Pentachlorodibenzo-p-dioxin	25 - 181
¹³ C-2,3,4,6,7,8-Hexachlorodibenzofuran	28 - 136
¹³ C-2,3,4,7,8-Pentachlorodibenzofuran	21 - 178
¹³ C-2,3,7,8-Tetrachlorodibenzofuran	24 - 169
¹³ C-2,3,7,8-Tetrachlorodibenzo-p-dioxin	25 - 164
¹³ C-Octachlorodibenzo-p-dioxin	17 - 157
³⁷ Cl-2,3,7,8-Tetrachlorodibenzo-p-dioxin	35 - 197
PAHs	
2-Methylnaphthalene-d10	30 - 120
Acenaphthylene-d8	20 - 120
Benz(a)anthracene-d12	30 - 120
Benzo(a)pyrene-d12	30 - 120
Benzo(b+k)fluoranthene-d12	30 - 120
Benzo(g,h,i)perylene-d12	30 - 120
Chrysene-d12	30 - 120
Dibenz(a,h)anthracene-d14	30 - 120
Fluoranthene-d10	44 - 112
Fluoranthene-d10	30 - 120

Table B-3. Laboratory Control Limits for Chinook Tissue Surrogate Samples.

Analysis	Percent Recovery
Fluorene-d10	47 - 97
Indeno(1,2,3-cd)pyrene-d12	30 - 120
Naphthalene-d8	15 - 120
Phenanthrene-d10	30 - 120
<i>Organochlorine Pesticides</i>	
¹³ C-2,4'-DDE	40 - 150
¹³ C-2,4'-DDT	40 - 150
¹³ C-4,4'-DDE	40 - 150
¹³ C-4,4'-DDT	40 - 150
¹³ C-Aldrin	30 - 200
¹³ C-alpha-Endosulfan	30 - 150
¹³ C-beta-Endosulfan	30 - 150
¹³ C-beta-Hexachlorocyclohexane	30 - 150
¹³ C-cis-Nonachlor	30 - 150
¹³ C-delta-Hexachlorocyclohexane	30 - 150
¹³ C-Dieldrin	30 - 150
¹³ C-Endrin	30 - 150
¹³ C-gamma-Hexachlorocyclohexane	30 - 150
¹³ C-Heptachlor	30 - 150
¹³ C-Heptachlor epoxide	30 - 150
¹³ C-Methoxychlor	30 - 150
¹³ C-Oxychlordane	30 - 200
¹³ C-trans-Chlordanane	30 - 200
¹³ C-trans-Nonachlor	30 - 150
2,4,5,6-Tetrachloro-m-xylene	10 - 158

Table B-4. Laboratory Control Limits for Chinook Tissue Matrix Spike, Laboratory Control Samples, and Ongoing Precision and Recovery.

Analysis	Matrix Spike Recovery	Laboratory Control Sample Recovery	Type of Duplicate	Control Limit Relative Percent Difference
Metals				
Aluminum	60 - 130	53 - 181	LD	30
Antimony	70 - 130	88 - 109	LD	30
Arsenic	70 - 130	7.76 - 112	LD	30
Cadmium	70 - 130	15 - 112	LD	30
Chromium	60 - 130	23.4 - 110	LD	30
Copper	70 - 130	1.74 - 112	LD	30
Lead	59 - 130	0.02 - 109	LD	30
Mercury	--	2.58 - 115	--	--
Nickel	70 - 130	1.9 - 110	LD	30
Selenium	60 - 130	5.26 - 116	LD	30
Silver	67 - 130	0.9 - 112	LD	30
Zinc	60 - 130	20.3 - 116	LD	30
Butyltins				
Butyltin ion	--	10 - 143	LCSD	30
Dibutyltin ion	--	10 - 130	LCSD	30
Tetrabutyltin	--	10 - 117	LCSD	30
Tributyltin ion	--	23 - 129	LCSD	30
Conventionals				
Lipids	--	--	--	--
Total solids	--	--	--	--
Organochlorine Pesticides				
2,4'-DDD	--	35 - 157	LCSD	30
2,4'-DDE	--	42 - 146	LCSD	30
2,4'-DDT	--	39 - 156	LCSD	30
4,4'-DDD	--	49 - 132	LCSD	30
4,4'-DDE	--	52 - 130	LCSD	30
4,4'-DDT	--	53 - 136	LCSD	30
Aldrin	--	31 - 130	LCSD	30
alpha-Endosulfan	--	28 - 130	LCSD	30
alpha-Hexachlorocyclohexane	--	48 - 137	LCSD	30
beta-Endosulfan	--	35 - 130	LCSD	30
beta-Hexachlorocyclohexane	--	45 - 138	LCSD	30
cis-Chlordane	--	48 - 130	LCSD	30
cis-Nonachlor	--	46 - 132	LCSD	30
delta-Hexachlorocyclohexane	--	58 - 135	LCSD	30
Dieldrin	--	45 - 136	LCSD	30
Endosulfan sulfate	--	44 - 134	LCSD	30
Endrin	--	46 - 141	LCSD	30
Endrin aldehyde	--	12 - 130	LCSD	30
Endrin ketone	--	49 - 130	LCSD	30
gamma-Hexachlorocyclohexane	--	47 - 135	LCSD	30
Heptachlor	--	40 - 130	LCSD	30
Heptachlor epoxide	--	41 - 134	LCSD	30
Methoxychlor	--	47 - 139	LCSD	30
Oxychlordane	--	50 - 130	LCSD	30
Toxaphene	--	42 - 177	LCSD	30
trans-Chlordane	--	23 - 155	LCSD	30
trans-Nonachlor	--	48 - 130	LCSD	30
Semivolatile Organic Compounds				
1,2,4-Trichlorobenzene	--	10 - 108	LCSD	30
1,2-Dichlorobenzene	--	49 - 130	LCSD	30
1,3-Dichlorobenzene	--	47 - 130	LCSD	30
1,4-Dichlorobenzene	--	45 - 130	LCSD	30

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Table B-4. Laboratory Control Limits for Chinook Tissue Matrix Spike, Laboratory Control Samples, and Ongoing Precision and Recovery.

Analysis	Matrix Spike Recovery	Laboratory Control Sample Recovery	Type of Duplicate	Control Limit Relative Percent Difference
Benzyl alcohol	--	61 - 130	LCSD	30
Dibenzofuran	--	10 - 191	LCSD	40
Hexachlorobenzene	--	30 - 130	LCSD	30
Hexachlorobutadiene	--	10 - 145	LCSD	30
Hexachloroethane	--	39 - 108	LCSD	30
N-Nitrosodiphenylamine	--	55 - 134	LCSD	30
Phenols				
2,4-Dimethylphenol	--	10 - 103	LCSD	30
2-Methylphenol	--	41 - 112	LCSD	30
4-Methylphenol	--	35 - 116	LCSD	30
Pentachlorophenol	--	45 - 120	LCSD	30
Phenol	--	52 - 116	LCSD	30
Phthalate Esters				
Bis(2-ethylhexyl) phthalate	--	36 - 161	LCSD	30
Butylbenzyl phthalate	--	51 - 145	LCSD	30
Dibutyl phthalate	--	54 - 152	LCSD	30
Diethyl phthalate	--	59 - 132	LCSD	30
Dimethyl phthalate	--	54 - 124	LCSD	30
Di-n-octyl phthalate	--	53 - 157	LCSD	30
Polycyclic Aromatic Hydrocarbons				
2-Methylnaphthalene	--	10 - 181	LCSD	40
Acenaphthene	--	41 - 130	LCSD	40
Acenaphthylene	--	44 - 140	LCSD	40
Anthracene	--	40 - 130	LCSD	40
Benz(a)anthracene	--	46 - 133	LCSD	40
Benzo(a)pyrene	--	49 - 144	LCSD	40
Benzo(b)fluoranthene	--	54 - 137	LCSD	40
Benzo(b+j)fluoranthene	--	70 - 130	--	--
Benzo(g,h,i)perylene	--	46 - 143	LCSD	40
Benzo(k)fluoranthene	--	54 - 145	LCSD	40
Chrysene	--	46 - 136	LCSD	40
Dibenz(a,h)anthracene	--	39 - 152	LCSD	40
Fluoranthene	--	41 - 141	LCSD	40
Fluorene	--	44 - 130	LCSD	40
Indeno(1,2,3-cd)pyrene	--	41 - 149	LCSD	40
Naphthalene	--	41 - 130	LCSD	40
Phenanthrene	--	45 - 130	LCSD	40
Pyrene	--	34 - 152	LCSD	40
Dioxin/Furans				
Heptachlorodibenzofuran homologs	--	--	--	--
Heptachlorodibenzo-p-dioxin homologs	--	--	--	--
Hexachlorodibenzofuran homologs	--	--	--	--
Hexachlorodibenzo-p-dioxin homologs	--	--	--	--
Octachlorodibenzofuran	--	63 - 170	--	--
Octachlorodibenzo-p-dioxin	--	78 - 144	--	--
Pentachlorodibenzofuran homologs	--	--	--	--
Pentachlorodibenzo-p-dioxin homologs	--	--	--	--
Tetrachlorodibenzofuran homologs	--	--	--	--
Tetrachlorodibenzo-p-dioxin homologs	--	--	--	--
1,2,3,4,6,7,8-Heptachlorodibenzofuran	--	82 - 122	--	--
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	--	70 - 140	--	--
1,2,3,4,7,8,9-Heptachlorodibenzofuran	--	78 - 138	--	--
1,2,3,4,7,8-Hexachlorodibenzofuran	--	72 - 134	--	--
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	--	70 - 164	--	--
1,2,3,6,7,8-Hexachlorodibenzofuran	--	84 - 130	--	--
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	--	76 - 134	--	--

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Table B-4. Laboratory Control Limits for Chinook Tissue Matrix Spike, Laboratory Control Samples, and Ongoing Precision and Recovery.

Analysis	Matrix Spike Recovery	Laboratory Control Sample Recovery	Type of Duplicate	Control Limit Relative Percent Difference
1,2,3,7,8,9-Hexachlorodibenzofuran	--	78 - 130	--	--
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	--	64 - 162	--	--
1,2,3,7,8-Pentachlorodibenzofuran	--	80 - 134	--	--
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	--	70 - 142	--	--
2,3,4,6,7,8-Hexachlorodibenzofuran	--	70 - 156	--	--
2,3,4,7,8-Pentachlorodibenzofuran	--	68 - 160	--	--
2,3,7,8-Tetrachlorodibenzofuran	--	75 - 158	--	--
2,3,7,8-Tetrachlorodibenzo-p-dioxin	--	67 - 158	--	--
PCB Aroclors				
Aroclor 1016	--	--	--	--
Aroclor 1221	--	--	--	--
Aroclor 1232	--	--	--	--
Aroclor 1242	--	--	--	--
Aroclor 1248	--	--	--	--
Aroclor 1254	--	--	--	--
Aroclor 1260	--	--	--	--
PCB Homologs				
Dichlorobiphenyl	--	--	--	--
Heptachlorobiphenyl	--	--	--	--
Hexachlorobiphenyl	--	--	--	--
Monochlorobiphenyl	--	--	--	--
Nonachlorobiphenyl	--	--	--	--
Octachlorobiphenyl	--	--	--	--
Pentachlorobiphenyl	--	--	--	--
Tetrachlorobiphenyl	--	--	--	--
Trichlorobiphenyl	--	--	--	--
PCB Congeners				
2,2',3,3',4,4',5,5',6,6'-Decachlorobiphenyl	--	50 - 150	--	--
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl	--	50 - 150	--	--
2,2',3,3',4,4',5,5'-Octachlorobiphenyl	--	--	--	--
2,2',3,3',4,4',5,6,6'-Nonachlorobiphenyl	--	--	--	--
2,2',3,3',4,4',5,6'-Octachlorobiphenyl	--	--	--	--
2,2',3,3',4,4',5,6-Octachlorobiphenyl	--	--	--	--
2,2',3,3',4,4',5-Heptachlorobiphenyl	--	--	--	--
2,2',3,3',4,5,5',6,6'-Nonachlorobiphenyl	--	50 - 150	--	--
2,2',3,3',4,5,5'-Heptachlorobiphenyl	--	--	--	--
2,2',3,3',4,5',6,6'-Octachlorobiphenyl	--	--	--	--
2,2',3,3',4,5',6-Heptachlorobiphenyl	--	--	--	--
2,2',3,3',4,5,6-Heptachlorobiphenyl	--	--	--	--
2,2',3,3',4,5,6'-Heptachlorobiphenyl	--	--	--	--
2,2',3,3',4,6,6'-Heptachlorobiphenyl	--	--	--	--
2,2',3,3',4,6-Hexachlorobiphenyl	--	--	--	--
2,2',3,3',4-Pentachlorobiphenyl	--	--	--	--
2,2',3,3',5,5',6,6'-Octachlorobiphenyl	--	50 - 150	--	--
2,2',3,3',5,5',6-Heptachlorobiphenyl	--	--	--	--
2,2',3,3',5,5'-Hexachlorobiphenyl	--	--	--	--
2,2',3,3',5,6,6'-Heptachlorobiphenyl	--	--	--	--
2,2',3,3',6,6'-Hexachlorobiphenyl	--	--	--	--
2,2',3,3',6-Pentachlorobiphenyl	--	--	--	--
2,2',3,4,4',5,5',6-Octachlorobiphenyl	--	--	--	--
2,2',3,4,4',5,6,6'-Octachlorobiphenyl	--	--	--	--
2,2',3,4,4',5,6-Heptachlorobiphenyl	--	--	--	--
2,2',3,4,4',5,6-Octachlorobiphenyl	--	--	--	--
2,2',3,4,4',5-Hexachlorobiphenyl	--	--	--	--
2,2',3,4,4',6,6'-Heptachlorobiphenyl	--	--	--	--

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Table B-4. Laboratory Control Limits for Chinook Tissue Matrix Spike, Laboratory Control Samples, and Ongoing Precision and Recovery.

Analysis	Matrix Spike Recovery	Laboratory Control Sample Recovery	Type of Duplicate	Control Limit Relative Percent Difference
2,2',3,4',5,5',6-Heptachlorobiphenyl	--	--	--	--
2,2',3,4',5,5'-Hexachlorobiphenyl	--	--	--	--
2,2',3,4,5,5'-Hexachlorobiphenyl	--	--	--	--
2,2',3,4',5,6,6'-Heptachlorobiphenyl	--	50 - 150	--	--
2,2',3,4,5,6,6'-Heptachlorobiphenyl	--	--	--	--
2,2',3,4',5,6'-Hexachlorobiphenyl	--	--	--	--
2,2',3,4,5',6-Hexachlorobiphenyl	--	--	--	--
2,2',3,4,5,6-Hexachlorobiphenyl	--	--	--	--
2,2',3,4,6,6'-Hexachlorobiphenyl	--	--	--	--
2,2',3,4,6'-Pentachlorobiphenyl	--	--	--	--
2,2',3,4'-Tetrachlorobiphenyl	--	--	--	--
2,2',3,5,5'-Pentachlorobiphenyl	--	--	--	--
2,2',3,5,6,6'-Hexachlorobiphenyl	--	--	--	--
2,2',3,5,6'-Pentachlorobiphenyl	--	--	--	--
2,2',3,5-Tetrachlorobiphenyl	--	--	--	--
2,2',3,6,6'-Pentachlorobiphenyl	--	--	--	--
2,2',3,6'-Tetrachlorobiphenyl	--	--	--	--
2,2',3-Trichlorobiphenyl	--	--	--	--
2,2',4,4',6,6'-Hexachlorobiphenyl	--	50 - 150	--	--
2,2',4,5,6-Pentachlorobiphenyl	--	--	--	--
2,2',4,5-Tetrachlorobiphenyl	--	--	--	--
2,2',4,6,6'-Pentachlorobiphenyl	--	50 - 150	--	--
2,2',4-Trichlorobiphenyl	--	--	--	--
2,2',5,5'-Tetrachlorobiphenyl	--	--	--	--
2,2',6,6'-Tetrachlorobiphenyl	--	50 - 150	--	--
2,2',6-Trichlorobiphenyl	--	50 - 150	--	--
2,2'-Dichlorobiphenyl	--	50 - 150	--	--
2,3,3',4,4',5,5',6-Octachlorobiphenyl	--	50 - 150	--	--
2,3,3',4,4',5,5'-Heptachlorobiphenyl	--	50 - 150	--	--
2,3,3',4,4',5,6-Heptachlorobiphenyl	--	--	--	--
2,3,3',4,4',5,6-Heptachlorobiphenyl	--	--	--	--
2,3,3',4,4',6-Hexachlorobiphenyl	--	--	--	--
2,3,3',4,4'-Pentachlorobiphenyl	--	50 - 150	--	--
2,3,3',4,5,5',6-Heptachlorobiphenyl	--	--	--	--
2,3,3',4,5,5'-Hexachlorobiphenyl	--	--	--	--
2,3,3',4,5,5'-Hexachlorobiphenyl	--	--	--	--
2,3,3',4,5',6-Hexachlorobiphenyl	--	--	--	--
2,3,3',4,5',6-Hexachlorobiphenyl	--	--	--	--
2,3,3',4,5',5'-Pentachlorobiphenyl	--	--	--	--
2,3,3',4,5-Pentachlorobiphenyl	--	--	--	--
2,3,3',4,6-Pentachlorobiphenyl	--	--	--	--
2,3,3',4'-Tetrachlorobiphenyl	--	--	--	--
2,3,3',4-Tetrachlorobiphenyl	--	--	--	--
2,3,3',5,5',6-Hexachlorobiphenyl	--	--	--	--
2,3,3',5,5'-Pentachlorobiphenyl	--	--	--	--
2,3,3',5,6-Pentachlorobiphenyl	--	--	--	--
2,3,3',5'-Tetrachlorobiphenyl	--	--	--	--
2,3,3',5-Tetrachlorobiphenyl	--	--	--	--
2,3',4,4',5,5'-Hexachlorobiphenyl	--	--	--	--
2,3',4,4',5,5'-Hexachlorobiphenyl	--	50 - 150	--	--
2,3',4,4',5-Pentachlorobiphenyl	--	50 - 150	--	--
2,3',4,4',5-Pentachlorobiphenyl	--	50 - 150	--	--
2,3',4,4',5-Pentachlorobiphenyl	--	50 - 150	--	--
2,3',4,4'-Tetrachlorobiphenyl	--	--	--	--
2,3,4,4'-Tetrachlorobiphenyl	--	--	--	--
2,3',4,5,5'-Pentachlorobiphenyl	--	--	--	--
2,3',4,5,6-Pentachlorobiphenyl	--	--	--	--
2,3',4,5'-Tetrachlorobiphenyl	--	--	--	--
2,3',4,5',5'-Hexachlorobiphenyl	--	--	--	--
2,3',4,4',5-Pentachlorobiphenyl	--	50 - 150	--	--
2,3',4,4'-Tetrachlorobiphenyl	--	--	--	--
2,3,4,4'-Tetrachlorobiphenyl	--	--	--	--
2,3',4,5,5'-Pentachlorobiphenyl	--	--	--	--
2,3',4,5,6-Pentachlorobiphenyl	--	--	--	--
2,3',4,5'-Tetrachlorobiphenyl	--	--	--	--
2,3',4,5',5'-Hexachlorobiphenyl	--	--	--	--
2,3',4,4',5-Pentachlorobiphenyl	--	50 - 150	--	--
2,3',4,4'-Tetrachlorobiphenyl	--	--	--	--
2,3,4,4'-Tetrachlorobiphenyl	--	--	--	--
2,3',4,5,5'-Pentachlorobiphenyl	--	--	--	--
2,3',4,5,6-Pentachlorobiphenyl	--	--	--	--
2,3',4,5'-Tetrachlorobiphenyl	--	--	--	--
2,3',4,5',5'-Hexachlorobiphenyl	--	--	--	--
2,3',4,4',5-Pentachlorobiphenyl	--	50 - 150	--	--
2,3',4,4'-Tetrachlorobiphenyl	--	--	--	--
2,3,4,4'-Tetrachlorobiphenyl	--	--	--	--
2,3',4,5,5'-Pentachlorobiphenyl	--	--	--	--
2,3',4,5,6-Pentachlorobiphenyl	--	--	--	--
2,3',4,5'-Tetrachlorobiphenyl	--	--	--	--
2,3',4,5-Tetrachlorobiphenyl	--	--	--	--
2,3,4,5-Tetrachlorobiphenyl	--	--	--	--

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Table B-4. Laboratory Control Limits for Chinook Tissue Matrix Spike, Laboratory Control Samples, and Ongoing Precision and Recovery.

Analysis	Matrix Spike Recovery	Laboratory Control Sample Recovery	Type of Duplicate	Control Limit Relative Percent Difference
2,3,4,6-Tetrachlorobiphenyl	--	--	--	--
2,3',4-Trichlorobiphenyl	--	--	--	--
2,3,4'-Trichlorobiphenyl	--	--	--	--
2,3',5,5'-Tetrachlorobiphenyl	--	--	--	--
2,3',5',6-Tetrachlorobiphenyl	--	--	--	--
2,3',5'-Trichlorobiphenyl	--	--	--	--
2,3,5-Trichlorobiphenyl	--	--	--	--
2,3',6-Trichlorobiphenyl	--	--	--	--
2,3,6-Trichlorobiphenyl	--	--	--	--
2,3'-Dichlorobiphenyl	--	--	--	--
2,3-Dichlorobiphenyl	--	--	--	--
2,4',5-Trichlorobiphenyl	--	--	--	--
2,4',6-Trichlorobiphenyl	--	--	--	--
2,4'-Dichlorobiphenyl	--	--	--	--
2,4-Dichlorobiphenyl	--	--	--	--
2,5-Dichlorobiphenyl	--	--	--	--
2,6-Dichlorobiphenyl	--	--	--	--
2-Chlorobiphenyl	--	50 - 150	--	--
3,3',4,4',5,5'-Hexachlorobiphenyl	--	50 - 150	--	--
3,3',4,4',5-Pentachlorobiphenyl	--	50 - 150	--	--
3,3',4,4'-Tetrachlorobiphenyl	--	50 - 150	--	--
3,3',4,5,5'-Pentachlorobiphenyl	--	--	--	--
3,3',4,5'-Tetrachlorobiphenyl	--	--	--	--
3,3',4,5-Tetrachlorobiphenyl	--	--	--	--
3,3',4-Trichlorobiphenyl	--	--	--	--
3,3',5,5'-Tetrachlorobiphenyl	--	--	--	--
3,3',5-Trichlorobiphenyl	--	--	--	--
3,3'-Dichlorobiphenyl	--	--	--	--
3,4,4',5-Tetrachlorobiphenyl	--	50 - 150	--	--
3,4,4'-Trichlorobiphenyl	--	50 - 150	--	--
3,4',5-Trichlorobiphenyl	--	--	--	--
3,4,5-Trichlorobiphenyl	--	--	--	--
3,5-Dichlorobiphenyl	--	--	--	--
3-Chlorobiphenyl	--	--	--	--
4,4'-Dichlorobiphenyl	--	50 - 150	--	--
4-Chlorobiphenyl	--	50 - 150	--	--
PCB012 & 013	--	--	--	--
PCB018 & 030	--	--	--	--
PCB020 & 028	--	--	--	--
PCB021 & 033	--	--	--	--
PCB026 & 029	--	--	--	--
PCB040 & 041 & 071	--	--	--	--
PCB044 & 047 & 065	--	--	--	--
PCB045 & 051	--	--	--	--
PCB049 & 069	--	--	--	--
PCB050 & 053	--	--	--	--
PCB059 & 062 & 075	--	--	--	--
PCB061 & 070 & 074 & 076	--	--	--	--
PCB083 & 099	--	--	--	--
PCB085 & 116 & 117	--	--	--	--
PCB086 & 087 & 097 & 108 & 119 & 125	--	--	--	--
PCB088 & 091	--	--	--	--
PCB090 & 101 & 113	--	--	--	--
PCB093 & 095 & 098 & 100 & 102	--	--	--	--
PCB107 & 124	--	--	--	--
PCB110 & 115	--	--	--	--
PCB128 & 166	--	--	--	--
PCB129 & 138 & 160 & 163	--	--	--	--
PCB134 & 143	--	--	--	--
PCB135 & 151 & 154	--	--	--	--

Table B-4. Laboratory Control Limits for Chinook Tissue Matrix Spike, Laboratory Control Samples, and Ongoing Precision and Recovery.

Analysis	Matrix Spike Recovery	Laboratory Control Sample Recovery	Type of Duplicate	Control Limit Relative Percent Difference
PCB139 & 140	--	--	--	--
PCB147 & 149	--	--	--	--
PCB153 & 168	--	--	--	--
PCB156 & 157	--	50 - 150	--	--
PCB171 & 173	--	--	--	--
PCB180 & 193	--	--	--	--
PCB183 & 185	--	--	--	--
PCB197 & 200	--	--	--	--
PCB198 & 199	--	--	--	--
Polychlorinated biphenyls	--	--	--	--

Notes:

LD - laboratory duplicate

LCSD - laboratory control sample duplicate

Table B-5. Data Validation Qualifiers and Definitions.

Data Qualifier	Definition
U	The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.
J	The associated numerical value is an estimated quantity.
NJ	Presumptive evidence of the presence of the material at an estimated quantity.
UJ	The material was analyzed for, but was not detected. The sample quantitation limit is an estimated quantity.

Table B-6. Summary of Qualified Data by Parameter Group for Chinook Tissue Samples.

Analyte Group	Number of Samples	Number of Data Points		Total # of Data Points	Detection and Qualification Frequencies (percent)		Reason for Qualification
		Detected	Undetected				
Peristaltic Samples							
Conventionals	12	24	0	24	100 0	detected undetected	
Metals	12	96	48	144	67 33 8 22	detected undetected J U	Pc, LB LB
Butyltins	11	14	30	44	32 68 7 43	detected undetected J U	CC LB
PCB Aroclors	18	53	73	126	42 58 42	detected undetected NJ	Other
Organochlorine Pesticides	18	204	276	480	43 58 4 5 9 2	detected undetected J NJ U UJ	LCSR, Ci, CC Ci, CC LB, PFP LCSR
Semivolatile Organic Compounds	18	38	82	120	32 68 8 4 14	detected undetected J U UJ	CC, LCSR LB, PFP LCSR
Phenols	8	3	37	40	8 93	detected undetected	
Phthalate Esters	8	13	35	48	27 73	detected undetected	
Polycyclic Aromatic Hydrocarbons	18	194	112	306	63 37 4 9 0	detected undetected J U UJ	LCSR LB, PFP LB, SSR

Table B-6. Summary of Qualified Data by Parameter Group for Chinook Tissue Samples.

Analyte Group	Number of Samples	Number of Data Points		Total # of Data Points	Detection and Qualification Frequencies (percent)		Reason for Qualification
		Detected	Undetected				
PCB Homologs	18	162	0	162	100	detected	
					0	undetected	
PCB Congeners	18	2543	337	2880	88	detected	
					12	undetected	
					4	U	LB, PFP
Dioxin/Furan Homologs	12	114	6	120	95	detected	
					5	undetected	
Dioxin/Furans	12	141	40	181	78	detected	
					22	undetected	
					8	U	PFP

Notes:

Includes replicates and splits, excludes field blanks.

The analyte groupings for SVOCs, phenols, PAHs, and phthalates are as defined in the Round 2 QAPP Addendum 1, Table A6-2 (see Integral 2004).

Reason for Qualification:

LB - Lab blank contamination

Pc - Precision (all replicates)

CC - Compound confirmation

LCSR - Laboratory control sample recoveries

Ci - Calibration (initial)

PFP - Potential false positive

SSR - Surrogate spike recoveries

Other - defined in validation report.

Table B-8. Juvenile Chinook Whole-body Samples with Limited Sample Mass.

Sample ID	Parameter Groups Not Analyzed	Reduced Sample Aliquot
T01-REP1	None	None
T01-REP2	None	None
T01-REP3	None	None
T02-REP1	Butyltins, SVOCs	None
T02-REP2	SVOCs	Butyltins
T02-REP3	SVOCs	Butyltins
T03-REP1	None	SVOCs
T03-REP2	SVOCs	Butyltins
T03-REP3	None	SVOCs
T04-REP1	None	None
T04-REP2	None	None
T04-REP3	None	None

Sample aliquots from QAPP Addendum 4 (Integral 2005a):

PCB congeners and dioxins/furans (10 g)

Organochlorine pesticides and lipids (10 g)

PAHs (10 g)

Mercury (5 g)

Other metals and percent moisture (5 g)

Butyltin compounds (5 g)

SVOCs by SIM (5 g)

Table B-9a. Field Replicate Results for Chinook Whole-body Tissue Samples.

Chemical Name	Location Name		T01				T02				T03				T04			
	Sample ID	Sample Type Code	LW2-T01-REP1	LW2-T01-REP2	LW2-T01-REP3	Relative Standard Deviation	LW2-T02-REP1	LW2-T02-REP2	LW2-T02-REP3	Relative Standard Deviation	LW2-T03-REP1	LW2-T03-REP2	LW2-T03-REP3	Relative Standard Deviation	LW2-T04-REP1	LW2-T04-REP2	LW2-T04-REP3	Relative Standard Deviation
	Parent Sample	Sample Date	Normal	Field Replicate	Normal	Field Replicate	Normal	Field Replicate	Normal	Field Replicate	Normal	Field Replicate	Normal	Field Replicate	Normal	Field Replicate	Normal	Field Replicate
Unit	05/10/2005	05/10/2005	05/10/2005	05/10/2005	05/10/2005	05/10/2005	05/10/2005	05/10/2005	05/10/2005	05/10/2005	05/12/2005	05/12/2005	05/12/2005	05/12/2005	05/12/2005	05/12/2005	05/12/2005	05/12/2005
PCB Aroclors																		
Aroclor 1016	ug/kg	0.000519 U	0.00044 U	0.000541 U	NA	0.000582 U	0.00071 U	0.00125 U	NA	0.000911 U	0.000999 U	0.000964 U	NA	0.000311 U	0.000246 U	0.000232 U	NA	
Aroclor 1221	ug/kg	0.000235 U	0.000188 U	0.000214 U	NA	0.000173 U	0.000184 U	0.000177 U	NA	0.00031 U	0.00034 U	0.000343 U	NA	0.000161 U	0.000128 U	0.00012 U	NA	
Aroclor 1232	ug/kg	0.000202 U	0.000203 U	0.000188 U	NA	0.000187 U	0.000192 U	0.000203 U	NA	0.000294 U	0.000288 U	0.000317 U	NA	0.000205 U	0.000191 U	0.000183 U	NA	
Aroclor 1242	ug/kg	4.67 NJ	5.91 NJ	4.95 NJ	13	10.3 NJ	8.77 NJ	13.1 NJ	20	7.42 NJ	6.14 NJ	9.31 NJ	21	0.646 NJ	0.91 NJ	0.757 NJ	17	
Aroclor 1248	ug/kg	0.00903 U	0.0153 U	0.0115 U	NA	0.0174 U	0.0157 U	0.0243 U	NA	0.00628 U	0.00653 U	0.0112 U	NA	0.00225 U	0.00299 U	0.00277 U	NA	
Aroclor 1254	ug/kg	40.9 NJ	36.1 NJ	24 NJ	26	38 NJ	35.7 NJ	42.2 NJ	9	47.1 NJ	32.1 NJ	64 NJ	33	5.98 NJ	10.3 NJ	7.87 NJ	27	
Aroclor 1260	ug/kg	263 NJ	43.6 NJ	45 NJ	108	44.5 NJ	55.6 NJ	45.9 NJ	12	198 NJ	103 NJ	126 NJ	35	5.45 NJ	9.14 NJ	6.54 NJ	27	
Total Aroclors	ug/kg	309 JT	85.6 JT	74 JT	85	92.8 JT	100 JT	101 JT	5	253 JT	141 JT	199 JT	28	12.1 JT	20.4 JT	15.2 JT	26	
Butyltins																		
Butyltin ion	ug/kg	1 U	1 U	0.98 U	NA		2.6 J	4.6	NA	1.6 U	5.4 J	1.5 U	NA	1.1 U	1.1 U	0.18 U	NA	
Dibutyltin ion	ug/kg	1.1 U	0.85 U	0.77 U	NA		2 U	1.7 U	NA	0.83 U	2.3 U	0.89 U	NA	0.58 U	1 U	0.8 U	NA	
Tributyltin ion	ug/kg	2.7	2.1 J	1.9 J	19		4.1 J	4.1	NA	1.3 J	2 J	1.9 J	22	0.37 J	0.45 J	0.42 J	10	
Tetrabutyltin	ug/kg	0.17 U	0.15 U	0.16 U	NA		0.29 U	0.25 U	NA	0.16 U	0.38 U	0.16 U	NA	0.15 U	0.16 U	0.16 U	NA	
Conventionals																		
Total solids	percent	18	19.5	18.7	4	19.5	19.6	19.4	1	20.2	19.7	19.5	2	19.3	19.9	19.5	2	
Lipids	percent	1.5	1.5	1.6	4	1.6	1.7	1.7	3	1.7	1.8	1.8	3	1.8	1.8	1.9	3	
Dioxin/Furan Homologs																		
Tetrachlorodibenzo-p-dioxin homologs	pg/g	0.0594 U	0.276	0.275	NA	0.512	0.414	0.876	41	0.371	0.252	0.0577 U	NA	0.054 U	0.0561 U	0.243	NA	
Pentachlorodibenzo-p-dioxin homologs	pg/g	0.87	0.813	0.817	4	0.619	0.627	2.29	82	0.954	0.727	1.12	21	0.301	0.365	0.701	47	
Hexachlorodibenzo-p-dioxin homologs	pg/g	2.79	2.93	3.79	17	8.02	1.8	3.41	73	3.14	3.11	4.57	23	0.25	0.551	1.08	67	
Heptachlorodibenzo-p-dioxin homologs	pg/g	9.15	8.13	10.2	11	12.4	3.23	4.48	74	7.83	8.42	9.44	10	1.02	1.18	1.08	7	
Octachlorodibenzo-p-dioxin	pg/g	19.4	17.6	20.8	8	8.28	5.24	7.46	22	14.7	15.7	18.3	11	2.36	2.45	2.08 J	8	
Tetrachlorodibenzofuran homologs	pg/g	0.358	0.517	0.333	25	4.5	4.46	3.95	7	0.343	0.473	0.554	23	0.212	0.307	0.251	19	
Pentachlorodibenzofuran homologs	pg/g	0.985	0.833	0.805	11	4.27	3.35	2.78	22	1.14	1.96	1.39	28	0.206	0.597 U	0.371	NA	
Hexachlorodibenzofuran homologs	pg/g	1.72	0.893	1.04	36	2.05	1.21	1.06	37	1.47	1.85	1.83	12	0.212	0.216	0.071	50	
Heptachlorodibenzofuran homologs	pg/g	2.61	1.32	1.65	36	1.18	0.521	0.78	40	1.44	2.07	1.63	19	0.263	0.0561 U	0.097	NA	
Octachlorodibenzofuran	pg/g	2.03 J	1.25 J	1.63 J	24	0.602 J	0.432 J	0.703 J	24	0.941 J	1.57 J	1 J	30	0.245 J	0.243 J	0.203 J	10	
Dioxins & Furans																		
2,3,7,8-Tetrachlorodibenzo-p-dioxin	pg/g	0.296 U	0.276	0.275	NA	0.457	0.414	0.876	44	0.371	0.252	0.354 U	NA	0.153 U	0.185 U	0.243	NA	
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	pg/g	0.763 J	0.813 J	0.736 J	5	0.619 J	0.569 J	2.29	84	0.868 J	0.657 J	1.06 J	23	0.301 J	0.365 J	0.701 J	47	
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	pg/g	0.283 U	0.297 J	0.306 J	NA	0.249 J	0.19 U	0.393 J	NA	0.34 J	0.345 J	0.429 J	13	0.082 U	0.096 J	0.131 J	NA	
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	pg/g	1.2	1.22	1.28	3	6.91	1.09 J	2.22	91	1.66	1.58	2.69	31	0.317 U	0.344 J	0.563 J	NA	
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	pg/g	0.451 J	0.423 J	0.448 J	3	0.492 J	0.265 J	0.414 J	30	0.512 J	0.491 J	0.759 J	25	0.084 J	0.149 U	0.166 J	NA	
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	pg/g	6.1	5.28	6.36	10	11.2	2.39	3.25	87	5.78	6.41	7.38	12	0.726 J	0.866 J	0.789 J	9	
2,3,7,8-Tetrachlorodibenzofuran	pg/g	0.364	0.545	0.333	28	4.74	4.86	4.17	8	0.371	0.312	0.541	29	0.21 J	0.297	0.26	17	
1,2,3,7,8-Pentachlorodibenzofuran	pg/g	0.124 U	0.143 J	0.124 J	NA	2.03	1.6	1.27	23	0.137 J	0.077 J	0.254 J	58	0.054 U	0.079 J	0.071 J	NA	
2,3,4,7,8-Pentachlorodibenzofuran	pg/g	0.369 J	0.343 J	0.253 J														

Table B-9a. Field Replicate Results for Chinook Whole-body Tissue Samples.

Chemical Name	Location Name		T01				T02				T03				T04					
	Sample ID	LW2-T01-REP1	LW2-T01-REP2	LW2-T01-REP3	Relative Standard Deviation	LW2-T02-REP1	LW2-T02-REP2	LW2-T02-REP3	Relative Standard Deviation	LW2-T03-REP1	LW2-T03-REP2	LW2-T03-REP3	Relative Standard Deviation	LW2-T04-REP1	LW2-T04-REP2	LW2-T04-REP3	Relative Standard Deviation			
	Sample Type Code	Normal	Field Replicate	Field Replicate		Normal	Field Replicate	Field Replicate		Normal	Field Replicate	Field Replicate		Normal	Field Replicate	Field Replicate				
Parent Sample	Sample Date	05/10/2005	LW2-T01-REP1	05/10/2005	05/10/2005	Relative Standard Deviation	05/10/2005	LW2-T02-REP1	05/10/2005	05/10/2005	Relative Standard Deviation	05/10/2005	05/12/2005	Relative Standard Deviation	05/12/2005	LW2-T04-REP1	05/12/2005	LW2-T04-REP3	05/12/2005	Relative Standard Deviation
Unit																				
Low Molecular Weight PAH	ug/kg	8.38 JT	16.1 JT	10 JT	35	11.5 JT	11.5 JT	11.4 JT	1	14 JT	13.5 JT	16.9 JT	12	16.9 JT	5.32 JT	5.04 JT	9.77 JT	40		
Dibenz(a,h)anthracene	ug/kg	0.12 U	0.12 U	0.19 J	NA	0.2 J	0.12 U	0.12 U	NA	0.12 U	0.12 U	0.15 J	NA	0.27 J	0.21 J	0.32 J	21			
Benz(a)anthracene	ug/kg	0.13 U	0.13 U	0.13 U	NA	0.21 J	0.13 U	0.2 J	NA	0.13 U	0.13 U	0.13 U	NA	0.13 U	0.13 U	0.13 U	0.13 U	NA		
Benz(a)pyrene	ug/kg	0.13 U	0.13 U	0.13 U	NA	0.13 U	0.13 U	0.13 U	NA	0.13 U	0.13 U	0.13 U	NA	0.13 U	0.13 U	0.13 U	0.13 U	NA		
Benz(b)fluoranthene	ug/kg	0.26 J	0.18 J	0.32 J	28	0.26 J	0.16 U	0.21 J	NA	0.16 U	0.16 J	0.16 U	NA	0.16 U	0.16 U	0.16 U	0.16 U	NA		
Benz(g,h,i)perylene	ug/kg	0.18 U	0.18 U	0.18 U	NA	0.18 U	0.18 U	0.19 U	NA	0.18 U	0.18 U	0.18 U	NA	0.18 U	0.18 U	0.18 U	0.18 U	NA		
Benz(k)fluoranthene	ug/kg	0.14 U	0.33 J	0.18 J	NA	0.15 J	0.2 J	0.16 J	16	0.14 U	0.14 U	0.14 U	NA	0.14 U	0.14 U	0.14 U	0.14 U	NA		
Chrysene	ug/kg	0.2 U	0.2 U	0.94	NA	0.28 J	0.2 U	0.35 J	NA	0.2 U	0.2 U	0.2 U	NA	0.2 U	0.2 U	0.2 U	0.2 U	NA		
Fluoranthene	ug/kg	0.97	0.93	1.5	28	1.1	0.7	1.1	24	0.37 U	0.46 J	0.46 J	NA	0.61	0.37 U	0.37 U	0.37 U	NA		
Indeno(1,2,3-cd)pyrene	ug/kg	0.17 U	0.17 U	0.17 U	NA	0.17 U	0.17 U	0.17 U	NA	0.17 U	0.17 U	0.17 U	NA	0.17 U	0.17 U	0.17 U	0.17 U	NA		
Pyrene	ug/kg	0.35 J	0.41 J	0.67	36	0.74	0.46 J	0.77	26	0.29 U	0.31 J	0.35 J	NA	0.49 J	0.29 U	0.29 U	0.29 U	NA		
High Molecular Weight PAH	ug/kg	1.58 JT	1.85 JT	3.8 JT	50	2.94 JT	1.36 JT	2.79 JT	37	0.37 UT	0.93 JT	0.96 JT	NA	1.37 JT	0.21 JT	0.32 JT	101			
Polyyclic Aromatic Hydrocarbons	ug/kg	9.96 JT	17.9 JT	13.8 JT	29	14.4 JT	12.9 JT	14.2 JT	6	14 JT	14.4 JT	17.8 JT	14	6.69 JT	5.25 JT	10.1 JT	34			
Benzo(b+j)fluoranthene	ug/kg				NA				NA				NA				NA			
PCB Congeners																				
PCB001	pg/g	4.09	4.98	5.8	17	6.51	7.28	6.41	7	21.4	26.2	24.1	10	7.43	7.81	7.68	3			
PCB002	pg/g	0.556 U	0.662	0.602	NA	0.604	0.711	0.656	8	1.07	1.26	1.22	8	0.598	0.649	0.586	5			
PCB003	pg/g	1.51	1.73	1.85	10	2.04	2.42	1.93	12	4.47	5.17	4.74	7	1.69	1.92	1.8	6			
PCB004	pg/g	49.2	52.7	54.7	5	52.7	56.6	55.3	4	238	196	214	10	31.4	34.1	33.3	4			
PCB005	pg/g	1.97	1.47	1.78	15	3.16	3.05	3.18	2	5.99	4.68	6.43	16	0.726	0.823 U	0.805 U	NA			
PCB006	pg/g	17.5	16.7	19.8	9	30.1	31.4	33.4	5	101	66.5	87.3	20	6.97	7.57	6.86	5			
PCB007	pg/g	3.36	3.16	3.93	11	5.66	6.2	6.71	8	10.4	9.83	11.7	9	1.51	1.61	1.56	3			
PCB008	pg/g	90.4	89.5	101	7	154	157	172	6	346	254	341	16	30.6	32.9	29.8	5			
PCB009	pg/g	5.65	5.59	6.58	9	9.71	10.2	11.4	8	19.6	17	21.1	11	2.49	2.66	2.48	4			
PCB010	pg/g	2	1.95	2.4	12	2.5	2.75	2.53	5	6.39	5.36	5.64	9	1.2	1.21	1.19	1			
PCB011	pg/g	8.61	8.94	8.62	2	5.82	8.46	9.25	23	5.99	5.02	5.61	9	46.8	24.7	29.7	34			
PCB012 & 013	pg/g	1.56	1.18	1.37	14	1.71	2.28	2.45	18	4.05	3.3	3.71	10	1.28 U	1.05	0.853 J	NA			
PCB014	pg/g	0.614 U	0.616 U	0.553 U	NA	0.569 U	0.584 U	0.617 U	NA	0.584 U	0.569 U	0.596 U	NA	0.558 U	0.58 U	0.555 U	NA			
PCB015	pg/g	14.8	11.5	12.8	13	15.1	18.6	16.7	10	32.8	27.2	31.3	10	4.41	4.85	4.31	6			
PCB016	pg/g	65.6	62.1	65.1	3	148	127	134	8	135	98.4	136	17	8.98	10.6	9.8	8			
PCB017	pg/g	108	127	113	8	229	204	274	15	319	300	380	13	16.2	21.9	18.7	15			
PCB018 & 030	pg/g	158	178	166	6	377	348	454	14	403	297	424	18	28.6	34.5	32	9			
PCB019	pg/g	48.1	49.5	45.4	4	61.7	56.3	68.6	10	208	115	158	29	5.53	7.48	5.89	16			
PCB020 & 028	pg/g	820	1110	864	17	1950	1610	2470	22	1070	915	1470	25	99.6	158	122	23			
PCB021 & 033	pg/g	230	209	228	5	440	382	535	17	300	237	367	22	15.7	23.3	18.7	20			
PCB022	pg/g	128	152	132	9	284	239	315	14	195										

Table B-9a. Field Replicate Results for Chinook Whole-body Tissue Samples.

Chemical Name	Location Name		T01				T02				T03				T04			
	Sample ID	LW2-T01-REP1	LW2-T01-REP2	LW2-T01-REP3	Relative Standard Deviation	LW2-T02-REP1	LW2-T02-REP2	LW2-T02-REP3	Relative Standard Deviation	LW2-T03-REP1	LW2-T03-REP2	LW2-T03-REP3	Relative Standard Deviation	LW2-T04-REP1	LW2-T04-REP2	LW2-T04-REP3	Relative Standard Deviation	
	Sample Type Code	Normal	Field Replicate	Field Replicate		Normal	Field Replicate	Field Replicate		Normal	Field Replicate	Field Replicate		Normal	Field Replicate	Field Replicate		
Parent Sample	LW2-T01-REP1	LW2-T01-REP1	LW2-T01-REP1	05/10/2005	Relative Standard Deviation	05/10/2005	Field Replicate	Field Replicate	05/10/2005	05/10/2005	Field Replicate	Field Replicate	05/12/2005	05/12/2005	Field Replicate	Field Replicate	05/12/2005	05/12/2005
Sample Date	05/10/2005	05/10/2005	05/10/2005	Unit		05/10/2005	05/10/2005	05/10/2005	Unit	05/12/2005	05/12/2005	05/12/2005	Unit	05/12/2005	05/12/2005	05/12/2005	Unit	
PCB067	pg/g	39.3	42	25.5	25	49.6	43.2	66.3	22	30.1	31.6	50	30	2.97	5.36	4.42	28	
PCB068	pg/g	1.71 U	14.4	10.5	NA	11.2	11.2	17.6	28	25.5	35	41.7	24	3.01	4.81	3.97	23	
PCB072	pg/g	21.4	22.4	13.7	25	22.1	19.9	27.1	16	21.7	24.4	34.8	26	3.28	6.11	4.62	30	
PCB073	pg/g	17.4	10.7	9.34	35	9.3	4.33	15.4	57	21.1	34.6	49.9	41	1.29	2.08	2.17	26	
PCB077	pg/g	61.9	122	54.5	47	118	112	127	6	74.3	53.9	96.9	29	13.2	20.4	18.1	21	
PCB078	pg/g	1.61 U	2.72 U	2.05 U	NA	3.1 U	2.78 U	4.29 U	NA	1.11 U	1.15 U	1.97 U	NA	0.908 U	0.942 U	0.903 U	NA	
PCB079	pg/g	40	37.3	21.6	30	35	35.7	48.8	20	33.8	27.7	62.7	45	5.86	10.6	6.65	33	
PCB080	pg/g	1.73 U	2.42 U	1.82 U	NA	2.75 U	2.48 U	3.84 U	NA	1.65 U	1.61 U	1.76 U	NA	1.57 U	1.63 U	1.57 U	NA	
PCB081	pg/g	8.55 U	10.3 U	6.2 U	NA	11.8 U	12.9 U	12 U	NA	8.48 U	5.18 U	10.8 U	NA	1.43 U	1.97 U	2.24 U	NA	
PCB082	pg/g	199	278	140	34	349	312	310	7	300	138	365	44	34.4	70.4	47.3	36	
PCB083 & 099	pg/g	2810	2440	1720	24	2420	2250	2730	10	3420	2600	4670	29	438	731	581	25	
PCB084	pg/g	369	265	168	38	412	375	405	5	400	184	474	43	42.2	90.1	57	39	
PCB085 & 116 & 117	pg/g	592	794	460	27	859	750	883	9	831	451	1070	40	135	230	180	26	
PCB086 & 087 & 097 & 108 & 119 & 125	pg/g	2300	2070	1280	28	2330	2210	2550	7	2470	1410	3340	40	309	559	403	30	
PCB088 & 091	pg/g	469	343	220	36	432	388	468	9	938	721	1140	22	46.5	95.1	61.8	37	
PCB089	pg/g	13.2	16.1	8.91	28	37.5	31	35.5	10	18.9	8.89	19.3	38	1.97 U	4.52	2.89	NA	
PCB090 & 101 & 113	pg/g	7680	3970	2930	51	3920	3820	4380	7	7570	4170	8060	32	567	1020	733	30	
PCB092	pg/g	1410	683	490	56	648	632	746	9	1270	805	1430	28	101	173	126	27	
PCB093 & 095 & 098 & 100 & 102	pg/g	3440	1530	1170	60	1840	1730	2060	9	4440	2110	3810	35	227	438	285	34	
PCB094	pg/g	35	11.5	8.8	78	10.3	11	13.3	14	37.9	46.8	48.2	13	1.22 U	1.99	2.1 U	NA	
PCB096	pg/g	13.3	6.84	4.61	55	11.9	11.1	12.7	7	37.8	35.8	56.5	26	0.837	1.81	1.15	39	
PCB103	pg/g	79.3	27.3	23.9	71	26.5	30.3	34.5	13	149	165	192	13	3.02	6.02	3.9	36	
PCB104	pg/g	8.49	2.18	2.08	86	0.97	1.18	1.18	11	8.79	9.73	17.2	39	0.176 U	0.254 J	0.135 J	NA	
PCB105	pg/g	1310	1610	1060	21	1590	1660	1860	8	1350	780	1930	42	297	503	384	26	
PCB106	pg/g	3.37 U	2.2 U	1.15 U	NA	0.552 U	1.51 U	1.5 U	NA	1.86 U	2.79 U	2.21 U	NA	1.14 U	1.69 U	1.58 U	NA	
PCB107 & 124	pg/g	122	131	89.8	19	120	122	131	5	142	78.4	186	40	20.4	31.4	27.6	21	
PCB109	pg/g	278	201	18	266	309	316	9	354	245	438	28	60.3	102	78.4	26		
PCB110 & 115	pg/g	4140	3110	2130	32	3450	3440	3750	5	5290	2170	5110	42	542	914	662	27	
PCB111	pg/g	8.83	3.81	4.24	49	4.74	4.44	4.28	5	13.7	14.2	15.5	6	0.895 U	1.23	1.54 U	NA	
PCB112	pg/g	185	29.7	25	114	23.9	0.689 U	18.1	NA	2.29 U	1.86 U	2.52 U	NA	0.881 U	1.05 U	1.52 U	NA	
PCB114	pg/g	90.5	119	72.9	25	110	114	120	4	78.2	49.6	108	37	18.6	33.8	25.6	29	
PCB118	pg/g	4440	4060	3100	18	3660	3810	4490	11	4460	2500	5880	40	833	1430	1080	27	
PCB120	pg/g	33.1	15.7	15.7	47	18	18.9	19.1	3	62.6	61.6	67.1	5	4.14	5.69	4.79	16	
PCB121	pg/g	11.4	3.21	3.87	74	2.83	2.81	3.7	16	14.6	18.1	20.9	18	0.895 U	1.06 U	1.54 U	NA	
PCB122	pg/g	10.5	17.2	7.91	40	11.4	11.1	13.5	11	13.7	6.94	16.3	39	2.62	4	2.75	24	
PCB123	pg/g	75.4	86	61.7	16	82.8	88.4	83.3	4	78.4	42.5	102	40	17.2	27.8	20.3	25	
PCB126	pg/g	16.8	13.8	10.7	22	14.4	35.3	14.9	55	20.2	11.9	19.6	27	3.12	4.02	4.54	18	
PCB127	pg/g	9.59	8.5	7.61	12	5.97	7.62	10.1	26	12.4	7.11	15.5	36	2.02 U	2.76	2.6		

Table B-9a. Field Replicate Results for Chinook Whole-body Tissue Samples.

Chemical Name	Location Name		T01				T02				T03				T04			
	Sample ID	LW2-T01-REP1	LW2-T01-REP2	LW2-T01-REP3	Relative Standard Deviation	LW2-T02-REP1	LW2-T02-REP2	LW2-T02-REP3	Relative Standard Deviation	LW2-T03-REP1	LW2-T03-REP2	LW2-T03-REP3	Relative Standard Deviation	LW2-T04-REP1	LW2-T04-REP2	LW2-T04-REP3	Relative Standard Deviation	
	Sample Type Code	Normal	Field Replicate	Field Replicate		Normal	Field Replicate	Field Replicate		Normal	Field Replicate	Field Replicate		Normal	Field Replicate	Field Replicate		
Parent Sample	LW2-T01-REP1	LW2-T01-REP1	LW2-T01-REP1	05/10/2005	Relative Standard Deviation	05/10/2005	Field Replicate	Field Replicate	05/10/2005	05/10/2005	Field Replicate	Field Replicate	05/12/2005	05/12/2005	Field Replicate	Field Replicate	05/12/2005	Relative Standard Deviation
Sample Date	05/10/2005	05/10/2005	05/10/2005	Unit		05/10/2005	Field Replicate	Field Replicate	05/10/2005	05/10/2005	Field Replicate	Field Replicate	05/12/2005	05/12/2005	Field Replicate	Field Replicate	05/12/2005	Relative Standard Deviation
PCB172	pg/g	2130	386	391	104	387	394	390	1	1660	888	1060	34	50.1	82.5	59	26	
PCB174	pg/g	10400	1290	1170	124	1340	1530	1550	8	7100	3580	4180	38	170	266	172	27	
PCB175	pg/g	404	66.1	68.8	108	66.7	82.6	76	11	314	161	201	35	8.98	16.2	10.9	31	
PCB176	pg/g	1070	108	99.5	131	106	110	133	13	564	272	356	38	14.1	28	16	39	
PCB177	pg/g	7280	1080	961	116	1200	1120	1090	5	6150	3120	3430	39	148	249	160	30	
PCB178	pg/g	2090	432	433	97	407	430	463	6	1940	1190	1290	28	65.3	100	73.6	23	
PCB179	pg/g	3030	367	334	124	337	358	435	14	2100	1090	1300	36	51.8	84	53.5	29	
PCB180 & 193	pg/g	31300	5410	5610	106	5530	7140	5600	15	23900	12700	15600	33	673	1120	825	26	
PCB181	pg/g	37.3	11	10.7	78	47.4	35.5	34.1	19	28.5	17.6	25.4	24	2.12 U	3.47	2.57	NA	
PCB182	pg/g	25.1	9.41	8.78	64	12.2	14.8	13.3	10	48.5	45.4	43.8	5	2.43	3.2	2.33	18	
PCB183 & 185	pg/g	8900	1390	1440	111	1440	1780	1560	11	6590	3350	4050	37	180	305	205	29	
PCB184	pg/g	2.53	1.59	1.59	29	2.14	2.36	2.38	6	3.61	3.19	3.47	6	0.926	1.35	1.22	19	
PCB186	pg/g	0.27 J	0.068 U	0.093 U	NA	0.79	0.603	0.563	19	0.356 J	0.182 J	0.423 U	NA	0.0647 U	0.061 J	0.0537 U	NA	
PCB187	pg/g	14000	2900	2770	98	3510	3790	3900	5	15400	7840	9700	36	538	724	527	19	
PCB188	pg/g	8.9	3.14	3.16	66	2.95	3.71	3.48	12	19.6	23.1	22.7	9	0.687	1.09	0.763	25	
PCB189	pg/g	360	68.9	71.1	100	66.2	72.6	67.1	5	269	147	181	32	8.98	15.2	11.2	27	
PCB190	pg/g	2490	393	395	111	412	501	443	10	1970	991	1180	38	55.6	90.2	63.4	26	
PCB191	pg/g	478	78.1	83.3	108	79	91.6	85	7	337	180	221	33	9.9	17.5	11.6	31	
PCB192	pg/g	1.23 U	1.23 U	1.1 U	NA	1.14 U	0.105 U	1.23 U	NA	1.17 U	1.14 U	1.19 U	NA	0.0807 U	1.16 U	0.0537 U	NA	
PCB194	pg/g	4700	725	792	110	802	942	828	9	3410	1950	2360	29	100	166	123	26	
PCB195	pg/g	1980	254	269	119	292	339	308	8	1440	768	916	34	36.4	61.7	43.2	28	
PCB196	pg/g	2520	359	380	114	382	479	450	11	1730	967	1190	30	47.1	87.9	59.4	32	
PCB197 & 200	pg/g	578	66.8	62.2	126	77.2	83.2	90.5	8	355	205	251	28	11	19.4	12	32	
PCB198 & 199	pg/g	4590	849	845	103	933	995	1010	4	3780	2150	2600	30	139	219	165	23	
PCB201	pg/g	458	73.1	72	111	73.4	87.9	88.4	10	326	198	249	25	11.6	21.7	14.6	32	
PCB202	pg/g	569	149	150	84	150	145	175	10	555	355	428	23	32.1	45	34.4	19	
PCB203	pg/g	2930	528	518	105	572	742	691	13	2440	1360	1760	29	92.3	149	116	24	
PCB204	pg/g	0.839	0.381 U	0.294 J	NA	1.32	1.01	1.08	14	0.855	0.471	0.777	29	0.133 J	0.223 U	0.165 U	NA	
PCB205	pg/g	246	37.9	38.2	112	45.2	50.8	43	9	178	110	120	27	5.91	9.24	6.87	23	
PCB206	pg/g	704	208	194	79	318	277	279	8	535	374	476	18	43.2	62.6	51.6	19	
PCB207	pg/g	91.5	22.8	23	87	32.3	31.2	30.9	2	70.8	45.9	66.8	22	5.03	8.15	6.19	24	
PCB208	pg/g	156	66.8	64.4	55	85.6	72.5	80.1	8	120	87.8	124	18	16.2	21.4	17.6	15	
PCB209	pg/g	45.7	39.3	39.4	9	92.8	73.7	76.5	13	40.6	31.9	65.8	38	21.5	22	19.6	6	
Polychlorinated biphenyls	pg/g	277000	88200	72300	78	97100	100000	111000	7	246000	136000	198000	29	12800	21600	15800	27	
PCB Homologs																		
Monochlorobiphenyl	pg/g	6.16	7.37	8.25	14	9.15	10.4	8.99	8	26.9	32.7	30	10	9.72	10.4	10.1	3	
Dichlorobiphenyl	pg/g	195	193	213	5	281	296	313	5	771	589	728	14	126	111	110	8	
Trichlorobiphenyl	pg/g	2330	2840	2410	11	5100	4370	6320	19	3880	3180	4750	20	280	404	332	18	
Tetrachlorobiphenyl	pg/g	9810	15300	7970	35	20900	17700	24700	1									

Table B-9a. Field Replicate Results for Chinook Whole-body Tissue Samples.

Chemical Name	Location Name		T01				T02				T03				T04				
	Sample ID	Sample Type Code	LW2-T01-REP1	LW2-T01-REP2	LW2-T01-REP3	Relative Standard Deviation	LW2-T02-REP1	LW2-T02-REP2	LW2-T02-REP3	Relative Standard Deviation	LW2-T03-REP1	LW2-T03-REP2	LW2-T03-REP3	Relative Standard Deviation	LW2-T04-REP1	LW2-T04-REP2	LW2-T04-REP3	Relative Standard Deviation	
	Parent Sample	Sample Date	Normal	Field Replicate	Field Replicate		Normal	Field Replicate	Field Replicate		Normal	Field Replicate	Field Replicate		Normal	Field Replicate	Field Replicate		
Chemical Name	Unit	Sample Date	05/10/2005	05/10/2005	05/10/2005	Relative Standard Deviation	05/10/2005	05/10/2005	05/10/2005	Relative Standard Deviation	05/10/2005	05/12/2005	05/12/2005	Relative Standard Deviation	05/12/2005	05/12/2005	05/12/2005	Relative Standard Deviation	
Heptachlor	ug/kg		0.33 U	0.43 U	0.39 J	NA	0.57 U	1.1 U	1.1 U	NA	1.1 U	1.2	0.76 J	NA	0.33 U	0.33 U	0.33 U	NA	
Heptachlor epoxide	ug/kg		2.1 NJ	1.3	1.4 J	27	1.6	1.4	0.93 U	NA	1.9 J	1.5	2	15	0.36 U	1.2 NJ	0.73 J	NA	
Methoxychlor	ug/kg		1.7 U	0.34 U	1.1 U	NA	1.4 U	1.4 U	1.3 U	NA	1.1 U	1.1 U	1.2 U	NA	0.34 U	0.34 U	0.34 U	NA	
Toxaphene	ug/kg		310 U	82 U	86 U	NA	80 U	110 U	110 U	NA	220 U	180 U	230 U	NA	24 U	38 U	36 U	NA	
SVOCs																			
2,4-Dimethylphenol	ug/kg		26 U	25 U	27 U	NA				NA	140 U		180 U	NA	28 U	27 U	30 U	NA	
2-Methylphenol	ug/kg		110 U	110 U	110 U	NA				NA	570 U		720 U	NA	120 U	110 U	120 U	NA	
4-Methylphenol	ug/kg		29 U	29 U	31 U	NA				NA	160 U		210 U	NA	32 U	31 U	34 U	NA	
Pentachlorophenol	ug/kg		400 J	60 U	64 U	NA				NA	330 U		420 U	NA	65 U	64 U	70 U	NA	
Phenol	ug/kg		38 J	33 U	35 U	NA				NA	190 U		230 U	NA	40 J	35 U	38 U	NA	
Dimethyl phthalate	ug/kg		9.9 U	9.8 U	11 U	NA				NA	55 U		69 U	NA	11 U	11 U	12 U	NA	
Diethyl phthalate	ug/kg		19 U	18 U	20 U	NA				NA	100 U		130 U	NA	20 U	20 U	21 U	NA	
Dibutyl phthalate	ug/kg		31 U	33 J	48 J	NA				NA	180 U		220 U	NA	34 U	52 J	50 J	NA	
Butylbenzyl phthalate	ug/kg		220	190	190	9				NA	160 J		190 U	NA	200	240	210	10	
Di-n-octyl phthalate	ug/kg		26 U	25 U	27 U	NA				NA	140 U		180 U	NA	28 U	27 U	30 U	NA	
Bis(2-ethylhexyl) phthalate	ug/kg		110 U	110 U	110 U	NA				NA	570 U		720 U	NA	120 U	140 J	140 J	NA	
1,2,4-Trichlorobenzene	ug/kg		20 U	19 U	21 U	NA				NA	110 U		140 U	NA	21 U	21 U	23 U	NA	
1,2-Dichlorobenzene	ug/kg		24 U	23 U	25 U	NA				NA	130 U		170 U	NA	25 U	25 U	27 U	NA	
1,3-Dichlorobenzene	ug/kg		22 UJ	21 UJ	23 UJ	NA				NA	120 UJ		150 UJ	NA	23 UJ	23 UJ	25 UJ	NA	
1,4-Dichlorobenzene	ug/kg		22 UJ	21 UJ	23 UJ	NA				NA	120 UJ		150 UJ	NA	23 UJ	23 UJ	25 UJ	NA	
Benzyl alcohol	ug/kg		56 J	55 J	77 J	20				NA	72 UJ		200 J	NA	57 J	31 J	39 J	31	
Dibenzo furan	ug/kg		0.85	0.88	0.9	3		0.55	0.64	0.58	8	0.61	0.68	0.75	10	0.37 J	0.4 J	0.48 J	14
Hexachlorobenzene	ug/kg		0.62 J	0.81 J	0.7 J	13		0.88 J	1.2	1 J	16	0.83 J	0.74 J	0.88 J	9	0.57 J	1.1 J	1.2 J	35
Hexachlorobutadiene	ug/kg		1.1 U	1.1 U	1.1 U	NA		1.1 U	1.1 U	1.1 U	NA	1.1 U	1.1 U	1.1 U	NA	1.1 U	1.8 U	1.1 U	NA
Hexachloroethane	ug/kg		17 U	17 U	18 U	NA		20 U	NA		NA	91 U		120 U	NA	18 U	18 U	19 U	NA
N-Nitrosodiphenylamine	ug/kg		19 U	19 U	19 U	NA				NA	110 U		130 U	NA	20 U	20 U	22 U	NA	

Table B-9b. Field Replicate Results for Chinook Stomach Content Samples.

Analyte	Location ID Sample ID Sample Date Units	T01			T02			T03		T04	
		LW2-T01 SC 05/10/2005	LW2-T01-NOAA SC 05/14/2005	Relative Percent Difference	LW2-T02 SC 05/10/2005	LW2-T02-NOAA SC 05/14/2005	Relative Percent Difference	LW2-T03 SC 05/10/2005	LW2-T04 SC 05/12/2005		
PCB Aroclors											
Aroclor 1016	ug/kg	0.00171 U	0.00377 U	NA	0.00299 U	0.00365 U	NA	0.00246 U	0.00112 U		
Aroclor 1221	ug/kg	0.000597 U	0.00135 U	NA	0.00155 U	0.00176 U	NA	0.000891 U	0.000581 U		
Aroclor 1232	ug/kg	0.00151 U	0.00327 U	NA	0.00217 U	0.00276 U	NA	0.00154 U	0.000761 U		
Aroclor 1242	ug/kg	8.16 NJ	4.04 NJ	68	10.7 NJ	0.00406 U	NA	11.4 NJ	0.87 NJ		
Aroclor 1248	ug/kg	0.00502 U	0.00511 U	NA	0.00804 U	42.2 NJ	NA	0.00577 U	0.00111 U		
Aroclor 1254	ug/kg	24.9 NJ	15.7 NJ	45	22.5 NJ	0.0199 U	NA	27.6 NJ	4.87 NJ		
Aroclor 1260	ug/kg	55.1 NJ	23.3 NJ	81	18.9 NJ	12.9 NJ	38	124 NJ	3.43 NJ		
Total Aroclors	ug/kg	88.2 JT	43 JT	69	52.1 JT	55.1 JT	-6	163 JT	9.17 JT		
PAHs											
2-Methylnaphthalene	ug/kg	14.2 U	15.6 U	NA	14.5 U	41.5	NA	12 U	6.15 U		
Acenaphthene	ug/kg	12.3	7.35 J	50	6.65 J	131	-181	4.44 J	1.96 J		
Acenaphthylene	ug/kg	2 J	1.24 U	NA	2.04 U	6.99 J	NA	0.738 J	0.764 J		
Anthracene	ug/kg	7.52	6.32 J	17	6.47 J	225	-189	1.3 J	1.78 J		
Fluorene	ug/kg	16.1	8.15 J	66	5.34 J	143	-186	5.31 J	2.07 U		
Naphthalene	ug/kg	29.3 U	38 U	NA	38.8 UJ	37.6 U	NA	27.3 U	11 U		
Phenanthrene	ug/kg	103	46.6	75	53.8	862	-177	33.9	23.5		
Low Molecular Weight PAH	ug/kg	141 JT	68.4 JT	69	72.3 JT	1410 JT	-180	45.7 JT	28 JT		
Dibenz(a,h)anthracene	ug/kg	0.93 U	0.57 U	NA	0.905 J	2.68 J	-99	0.486 U	0.207 U		
Benz(a)anthracene	ug/kg	6.6	7.67 J	-15	11.8	77.8	-147	1.89 J	2.66		
Benzo(a)pyrene	ug/kg	2.26 J	3.31 U	NA	5.82 U	20.7	NA	1.63 U	1.07 J		
Benzo(g,h,i)perylene	ug/kg	6.04 J	4.01 U	NA	5.65 U	7.3 J	NA	2.44 U	2.3 U		
Benzo(k)fluoranthene	ug/kg	7.12	5.2 J	31	7.04 J	23.8	-109	1.95 J	1.86 J		
Chrysene	ug/kg	42.4	22.2	63	29.4	97.7	-107	6.97 J	8.01		
Fluoranthene	ug/kg	109 J	49.4 J	75	75.1 J	475 J	-145	20.5 J	24.3 J		
Indeno(1,2,3-cd)pyrene	ug/kg	5 J	3.91 U	NA	4.64 J	8.51 J	-59	1.86 U	1.27 U		
Pyrene	ug/kg	64.3 J	33.7 J	62	60.1 J	301 J	-133	15.7 J	19.1 J		
High Molecular Weight PAH	ug/kg	261 JT	128 JT	68	200 JT	1050 JT	-136	49.9 JT	59.4 JT		
Polycyclic Aromatic Hydrocarbons	ug/kg	402 JT	196 JT	69	272 JT	2460 JT	-160	95.5 JT	87.4 JT		
Benzo(b+j)fluoranthene	ug/kg	18	9.35 J	63	11.2	35.3	-104	2.85 J	2.43		
PCB Congeners											
PCB001	pg/g	19.2	4.38 J	126	27.9	5.17	137	48.7	8.67		
PCB002	pg/g	3.35	3.6 U	NA	4.69	3.57 U	NA	4.04 U	1.47 U		
PCB003	pg/g	7.93 U	5.21 U	NA	15.6 U	5.4	NA	24.8	3.65		
PCB004	pg/g	84.6	23.7	112	124	74.8	49	371	30.6		
PCB005	pg/g	3.02	3.49 U	NA	4.99 U	2.76 U	NA	5.83 U	1.2 U		
PCB006	pg/g	29.2	11.9	84	59.3	9.54	145	146	9.13		
PCB007	pg/g	7.93	4.12 J	63	16.7	4.14 U	NA	17.6	2.57		
PCB008	pg/g	162	53.3	101	277	42.2	147	491	40.4		
PCB009	pg/g	10.4	3.3 U	NA	20.5	2.77 U	NA	29.5	3.54		
PCB010	pg/g	3.57	2.02 U	NA	6.77	3.97	52	10.4	1.25		
PCB011	pg/g	729	455	46	179	332	-60	109	334		
PCB012 & 013	pg/g	13.9	9.2 U	NA	24.1	5.78 J	123	31.5	2.6		
PCB014	pg/g	3.11 U	6.02 U	NA	4.93 U	4.76 U	NA	3.42 U	1.15 U		
PCB015	pg/g	203	100	68	278	67.2	122	395	17.3		
PCB016	pg/g	75.1	56.4	28	192	356	-60	226	14.6		
PCB017	pg/g	152	89	52	280	534	-62	453	24.6		
PCB018 & 030	pg/g	216	155	33	452	789	-54	647	39.5		
PCB019	pg/g	37.3	36.7	2	62.8	67.3	-7	136	5.23		

Table B-9b. Field Replicate Results for Chinook Stomach Content Samples.

Analyte	Location ID Sample ID Sample Date Units	T01			T02			T03		T04	
		LW2-T01 SC 05/10/2005	LW2-T01-NOAA SC 05/14/2005	Relative Percent Difference	LW2-T02 SC 05/10/2005	LW2-T02-NOAA SC 05/14/2005	Relative Percent Difference	LW2-T03 SC 05/10/2005	LW2-T04 SC 05/12/2005		
PCB020 & 028	pg/g	1400	675	70	1800	1170	42	1590	129		
PCB021 & 033	pg/g	285	172	49	453	113	120	353	21.8		
PCB022	pg/g	225	155	37	413	280	38	322	20.6		
PCB023	pg/g	0.67 U	6.32 U	NA	1.71 U	5 U	NA	0.966 U	1.21 U		
PCB024	pg/g	3.6	1.83 J	65	8.37	6.02	33	8.37	0.462 U		
PCB025	pg/g	51.9	35.3	38	86.6	59.7	37	114	6.95		
PCB026 & 029	pg/g	106	86.8	20	200	91.9	74	231	15.5		
PCB027	pg/g	18.3	21.7	-17	46.7	50.5	-8	63.8	2.93		
PCB031	pg/g	941	461	68	1040	576	57	1070	81		
PCB032	pg/g	256	94.9	92	238	289	-19	294	14.9		
PCB034	pg/g	3.17	1.45 U	NA	3.73 U	1.81 U	NA	2.98	0.421 J		
PCB035	pg/g	14.5	6.8 U	NA	13.2	4.76	94	9.36	2.51		
PCB036	pg/g	5.3	1.73 U	NA	1.01 U	1.37 U	NA	3.22 U	1.63		
PCB037	pg/g	377	226	50	370	121	101	336	26.1		
PCB038	pg/g	2.42 U	1.47 U	NA	1.05 U	3.71 U	NA	0.96 U	0.223 U		
PCB039	pg/g	4.35 U	3.53 J	NA	7.58	14.1 U	NA	5.16	0.796 J		
PCB040 & 041 & 071	pg/g	480	550	-14	823	1150	-33	531	44.4		
PCB042	pg/g	229	196	16	424	783	-59	269	36.2		
PCB043	pg/g	24.3	22.1	9	45.9	63.9	-33	19.7	2.52		
PCB044 & 047 & 065	pg/g	1370	1090	23	1730	3100	-57	2810	166		
PCB045 & 051	pg/g	97.5	106	-8	221	422	-63	479	12.6		
PCB046	pg/g	17.5	29.3 U	NA	58.5	70.7	-19	46.5	3.01		
PCB048	pg/g	147	129	13	266	536	-67	154	19.6		
PCB049 & 069	pg/g	884	1030	-15	1050	1940	-60	1770	126		
PCB050 & 053	pg/g	68.1	100	-38	180	273	-41	338	12.2		
PCB052	pg/g	1190	1260	-6	2000	3010	-40	1580	241		
PCB054	pg/g	5.01	8.59	-53	4.56	5.32	-15	38.9	0.54 U		
PCB055	pg/g	18.7	15.5 U	NA	30.6	24.2	23	13.4	2.77		
PCB056	pg/g	358	237	41	608	623	-2	335	46.7		
PCB057	pg/g	6.35	4.07 J	44	7.46	3.78	65	4.45	0.587 J		
PCB058	pg/g	2.17 J	2.8 J	-25	3.21 U	2.72 J	NA	4.2	0.514 J		
PCB059 & 062 & 075	pg/g	93.6	130	-33	168	223	-28	105	11.6		
PCB060	pg/g	338	191	56	568	455	22	258	45		
PCB061 & 070 & 074 & 076	pg/g	2400	1540	44	2800	2350	17	1710	370		
PCB063	pg/g	79.4	41.7	62	92.3	72.9	23	46.2	11.2		
PCB064	pg/g	593	636	-7	804	1100	-31	389	73.9		
PCB066	pg/g	1280	825	43	2060	1880	9	1170	251		
PCB067	pg/g	35.8	21	52	44.4	41.9	6	32.4	4		
PCB068	pg/g	18	7.65	81	8.39	8.62	-3	25.3	3.28		
PCB072	pg/g	17.2	28.7	-50	12	10.8	11	21.5	3.1		
PCB073	pg/g	4.79	5.14	-7	10.9 U	10.5 U	NA	20.1	0.679 U		
PCB077	pg/g	143	75.6	62	211	83.3	87	115	17.4		
PCB078	pg/g	5.06 U	9.78 U	NA	8.01 U	7.75 U	NA	5.55 U	1.87 U		
PCB079	pg/g	15.9	13.4	17	17.6	20.7	-16	20.3	4.32		
PCB080	pg/g	8.78 U	17 U	NA	13.9 U	13.4 U	NA	9.64 U	3.24 U		
PCB081	pg/g	6.62 U	5.01 U	NA	10.3	3.21 U	NA	4.9 U	0.712 U		
PCB082	pg/g	215	117	59	240	290	-19	184	33.5		
PCB083 & 099	pg/g	1830	1050	54	1460	1770	-19	2170	358		
PCB084	pg/g	225	218	3	319	390	-20	342	45.8		
PCB085 & 116 & 117	pg/g	514	303	52	545	667	-20	450	113		
PCB086 & 087 & 097 & 108 & 119 & 125	pg/g	1290	917	34	1350	1700	-23	1280	251		

Table B-9b. Field Replicate Results for Chinook Stomach Content Samples.

Analyte	Location ID	T01			T02			T03		T04	
		Sample ID	LW2-T01 SC 05/10/2005	LW2-T01-NOAA SC 05/14/2005	Relative Percent Difference	LW2-T02 SC 05/10/2005	LW2-T02-NOAA SC 05/14/2005	Relative Percent Difference	LW2-T03 SC 05/10/2005	LW2-T04 SC 05/12/2005	
		Units									
PCB088 & 091	pg/g	225	210	7	253	435	-53	600	46.4		
PCB089	pg/g	7.93 U	11.1	NA	20.5 U	38.8	NA	16.6	1.66		
PCB090 & 101 & 113	pg/g	2810	2930	-4	2240	2450	-9	4410	483		
PCB092	pg/g	429	386	11	393	393	0	752	77.2		
PCB093 & 095 & 098 & 100 & 102	pg/g	1160	1120	4	1260	1740	-32	3010	202		
PCB094	pg/g	8.14 U	12.2	NA	8.09 U	16.4	NA	18.4	0.989		
PCB096	pg/g	5.7	8.62	-41	9.96	11.1	-11	22.2	0.853 J		
PCB103	pg/g	22.3	22.9	-3	16.5	23.8	-36	101	2.72		
PCB104	pg/g	1.42 J	1.27 U	NA	0.586 U	1.09 J	NA	4.97 U	0.119 J		
PCB105	pg/g	1230	550	76	1160	762	41	744	224		
PCB106	pg/g	3.03 U	5.84 U	NA	4.78 U	4.63 U	NA	3.32 U	1.11 U		
PCB107 & 124	pg/g	128	109	16	102	64.1	46	88.5	19.6		
PCB109	pg/g	286	113	87	172	133	26	187	48.9		
PCB110 & 115	pg/g	2190	1920	13	2090	2140	-2	2620	440		
PCB111	pg/g	6.78 U	1.54 J	NA	1.96 J	1.93 U	NA	7.7	0.409 U		
PCB112	pg/g	2.65 U	5.12 U	NA	4.19 U	4.05 U	NA	2.9 U	0.976 U		
PCB114	pg/g	80.3	33.3	83	76.7	50.6	41	43.9	14.7		
PCB118	pg/g	3610	1630	76	2520	1730	37	2220	631		
PCB120	pg/g	21.9	10.3	72	9.68	7.66	23	32.1	2.73		
PCB121	pg/g	5.3	2.35 J	77	1.74 U	1.82 U	NA	7.94	0.414 U		
PCB122	pg/g	35.9	13.6	90	30.5	23.1	28	25.9	5.2		
PCB123	pg/g	60.4	37.5	47	64.7	41.5	44	43.9	12.9		
PCB126	pg/g	13.8	5.22 U	NA	17	5	109	11.6	2.84		
PCB127	pg/g	5.53	1.66 U	NA	3.11 U	3.33 J	NA	4.29	1.02 U		
PCB128 & 166	pg/g	767	351	74	391	337	15	1010	105		
PCB129 & 138 & 160 & 163	pg/g	7860	4010	65	3450	2890	18	14600	856		
PCB130	pg/g	411	165	85	163	143	13	514	49.3		
PCB131	pg/g	24.9	21.2	16	20.7	15.7	27	61.5	4.14		
PCB132	pg/g	811	726	11	594	540	10	2710	110		
PCB133	pg/g	193	74	89	73.8	49.6	39	262	15.8		
PCB134 & 143	pg/g	129	117	10	103	88.6	15	381	16.3		
PCB135 & 151 & 154	pg/g	1190	1290	-8	940	850	10	5000	151		
PCB136	pg/g	224	278	-22	184	141	26	960	33.3		
PCB137	pg/g	186	90.4	69	108	107	1	171	35.3		
PCB139 & 140	pg/g	51.8	37.4	32	41.1 U	43.1	NA	80.7	10.6		
PCB141	pg/g	1230	781	45	598	466	25	3700	99.8		
PCB142	pg/g	2.48 U	4.79 U	NA	3.93 U	2.19 U	NA	2.72 U	0.915 U		
PCB144	pg/g	159	149	6	107	90.8	16	702	17.4		
PCB145	pg/g	0.28 J	0.985 J	-111	0.616 J	0.581 U	NA	5 U	0.122 U		
PCB146	pg/g	1680	736	78	669	563	17	2970	171		
PCB147 & 149	pg/g	3200	3120	3	2220	1930	14	12400	466		
PCB148	pg/g	13.4	7.43	57	6.65 U	6.93	NA	29.7	1.14 U		
PCB150	pg/g	3.29 U	3.99 J	NA	3.1 J	3.19 J	-3	21.6	0.497 U		
PCB152	pg/g	1.73 U	2.58 J	NA	1.21 J	1.87 U	NA	5.65	0.105 U		
PCB153 & 168	pg/g	8470	4470	62	3820	2760	32	17700	842		
PCB155	pg/g	2.66 U	0.936 U	NA	0.769 U	1.07 U	NA	2.47 J	0.488 J		
PCB156 & 157	pg/g	715	279	88	306	199	42	504	83.8		
PCB158	pg/g	661	354	60	312	233	29	1080	73.4		
PCB159	pg/g	47.8	49.4	-3	32.2	18.4	55	180	4.34 U		
PCB161	pg/g	2.8 U	5.42 U	NA	4.44 U	4.29 U	NA	3.08 U	1.03 U		
PCB162	pg/g	25.3	12.3	69	12.6	7 U	NA	26.3	4.3		

Table B-9b. Field Replicate Results for Chinook Stomach Content Samples.

Analyte	Location ID Sample ID Sample Date Units	T01			T02			T03		T04	
		LW2-T01 SC 05/10/2005	LW2-T01-NOAA SC 05/14/2005	Relative Percent Difference	LW2-T02 SC 05/10/2005	LW2-T02-NOAA SC 05/14/2005	Relative Percent Difference	LW2-T03 SC 05/10/2005	LW2-T04 SC 05/12/2005		
PCB164	pg/g	356	257	32	216	141	42	944	42.1		
PCB165	pg/g	11	3.7 J	99	2.85 U	2.76 U	NA	12	0.36 U		
PCB167	pg/g	329	140	81	134	76.2	55	418	36.2		
PCB169	pg/g	5.35 U	1.94 U	NA	1.41 U	1.07 U	NA	8.85 U	0.316 U		
PCB170	pg/g	2610	997	89	820	598	31	5340	149		
PCB171 & 173	pg/g	552	345	46	227	159	35	1480	37.9		
PCB172	pg/g	617	252	84	191	125	42	1060	35.9		
PCB174	pg/g	1180	1180	0	703	453	43	4600	103		
PCB175	pg/g	93.1	40	80	35.4	23.4	41	204	6.84		
PCB176	pg/g	95.3	113	-17	64.1	38.5	50	429	9.6		
PCB177	pg/g	1460	708	69	483	364	28	3030	85.7		
PCB178	pg/g	656	325	67	254	160	45	1170	44.7		
PCB179	pg/g	309	471	-42	227	150	41	1310	43		
PCB180 & 193	pg/g	6820	2720	86	2270	1530	39	15000	424		
PCB181	pg/g	13.4	7.13 U	NA	19.4	20.7	-6	17.9	1.43 U		
PCB182	pg/g	8.36 U	8.18 U	NA	6.9	5.18	28	26	1.37		
PCB183 & 185	pg/g	1580	938	51	685	454	41	4410	114		
PCB184	pg/g	1.28 U	1.22 J	NA	1.27 U	1.53 U	NA	4.73 U	0.707 J		
PCB186	pg/g	2.67 U	5.17 U	NA	4.23 U	0.712 U	NA	2.93 U	0.986 U		
PCB187	pg/g	3520	2460	35	1510	1510	0	8210	394		
PCB188	pg/g	4.61	2.09 U	NA	1.96 J	1.35 J	37	9.4	0.542 J		
PCB189	pg/g	110	41.1	91	36.3	21.3	52	157	6.74		
PCB190	pg/g	569	244	80	181	123	38	1110	35.4		
PCB191	pg/g	108	44.2	84	35.7	24.2	38	225	6.6		
PCB192	pg/g	6.22 U	12 U	NA	9.84 U	9.52 U	NA	6.82 U	2.29 U		
PCB194	pg/g	1370	405	109	455	252	57	1980	78.4		
PCB195	pg/g	487	205	82	153	105	37	821	25.6		
PCB196	pg/g	620	220	95	210	130	47	1040	37.4		
PCB197 & 200	pg/g	91.9	88.6	4	57.6	30.7	61	243	9.66		
PCB198 & 199	pg/g	1560	727	73	567	354	46	2120	132		
PCB201	pg/g	119	50.8	80	44.5	29.5	41	190	10.4		
PCB202	pg/g	262	156	51	135	58.3	79	333	30.5		
PCB203	pg/g	864	395	75	307	207	39	1460	82		
PCB204	pg/g	0.523 U	0.21 U	NA	0.739 U	0.654 U	NA	0.71 J	0.156 U		
PCB205	pg/g	69.5	27.6	86	22.7	14.8	42	97.1	4.07		
PCB206	pg/g	445	156	96	203	139	37	301	44.8		
PCB207	pg/g	49.2	20.2	84	21.4	16	29	45.8	5.12		
PCB208	pg/g	143	52.7	92	62.8	38.9	47	74.2	15.7		
PCB209	pg/g	157	32.8	131	106	98	8	31.9	22.6		
Polychlorinated biphenyls	pg/g	87000	53800	47	59800	57100	5	162000	10600		
PCB Homologs											
Monochlorobiphenyl	pg/g	22.5	4.38	135	32.6	14.1	79	73.5	13.8		
Dichlorobiphenyl	pg/g	1250	648	63	985	535	59	1600	442		
Trichlorobiphenyl	pg/g	4170	2270	59	5660	4510	23	5860	408		
Tetrachlorobiphenyl	pg/g	9910	8250	18	14200	18200	-25	12300	1510		
Pentachlorobiphenyl	pg/g	16400	11700	33	14300	14900	-4	19400	3020		
Hexachlorobiphenyl	pg/g	28700	17500	48	14500	11700	21	66500	3220		
Heptachlorobiphenyl	pg/g	20300	10900	60	7750	5770	29	47800	1500		
Octachlorobiphenyl	pg/g	5440	2280	82	1950	1180	49	8280	410		
Nonachlorobiphenyl	pg/g	637	229	94	287	194	39	421	65.6		

Table B-9b. Field Replicate Results for Chinook Stomach Content Samples.

Analyte	Location ID Sample ID Sample Date Units	T01			T02			T03		T04	
		LW2-T01 SC 05/10/2005	LW2-T01-NOAA SC 05/14/2005	Relative Percent Difference	LW2-T02 SC 05/10/2005	LW2-T02-NOAA SC 05/14/2005	Relative Percent Difference	LW2-T03 SC 05/10/2005	LW2-T04 SC 05/12/2005		
Pesticides											
2,4'-DDD	ug/kg	0.228 J	0.419 NJ	-59	23.5 NJ	5.02	130	0.0924 J	0.0822 J		
2,4'-DDE	ug/kg	0.0542 J	0.0713 NJ	-27	2.91 NJ	3.78	-26	0.0289 J	0.0317 J		
2,4'-DDT	ug/kg	0.21 J	0.208 J	1	6.42 J	16.3	-87	0.149 J	0.108		
4,4'-DDD	ug/kg	2.04	2.01 NJ	1	113 NJ	22.8	133	0.528	0.478		
4,4'-DDE	ug/kg	9.16	4.96 NJ	59	144 NJ	74	64	6.91	5.33		
4,4'-DDT	ug/kg	0.969	1.29 J	-28	37.5 J	53.1	-34	1.17	0.578		
Total of 4,4'-DDD, -DDE, -DDT	ug/kg	12.2 T	8.26 JT	39	295 JT	150 T	65	8.61 T	6.39 T		
Aldrin	ug/kg	0.00911 U	0.0355 U	NA	0.0426 J	0.0333 U	NA	0.00576 J	0.000169 U		
alpha-Hexachlorocyclohexane	ug/kg	0.0317 J	0.0322 J	-2	0.0748 J	0.0298 U	NA	0.0319 U	0.0165 J		
beta-Hexachlorocyclohexane	ug/kg	0.029 U	0.0598 U	NA	0.215 J	0.0742 U	NA	0.0225 U	0.00892 U		
delta-Hexachlorocyclohexane	ug/kg	0.0024 U	0.0072 U	NA	0.0972 J	0.023 U	NA	0.00586 U	0.0014 U		
gamma-Hexachlorocyclohexane	ug/kg	0.0252 U	0.0435 U	NA	0.128 J	0.0677 U	NA	0.0194 U	0.0221 U		
cis-Chlordane	ug/kg	0.183 J	0.309 J	-51	1.39	0.891	44	0.358 J	0.267		
trans-Chlordane	ug/kg	0.126 J	0.262 J	-70	1.09	0.7 J	44	0.13 J	0.151 J		
Oxychlordane	ug/kg	0.379 U	0.172 J	NA	0.427 J	0.663 U	NA	0.868	0.58		
cis-Nonachlor	ug/kg	0.124 J	0.137 J	-10	0.416 J	0.412 J	1	0.301 J	0.244		
trans-Nonachlor	ug/kg	0.647	0.452 J	35	1.29	1.37	-6	1.32	1.02		
Die�drin	ug/kg	0.471 J	0.637 J	-30	2.92	1.58	60	1.8	0.905		
alpha-Endosulfan	ug/kg	0.23 U	0.533 U	NA	0.49 U	0.724 J	NA	0.141 U	0.449		
beta-Endosulfan	ug/kg	0.224 U	0.52 U	NA	0.439 U	0.561 U	NA	0.198 U	0.25 J		
Endosulfan sulfate	ug/kg	0.414 J	0.782 U	NA	0.68 J	0.713 J	-5	0.232 J	0.891		
Endrin	ug/kg	0.0066 U	0.0172 J	NA	0.212 J	0.033 J	146	0.0172 U	0.00503 J		
Endrin aldehyde	ug/kg	0.0405 U	0.0166 U	NA	0.0769 U	0.0286 U	NA	0.0205 U	0.0224 U		
Endrin ketone	ug/kg	0.0043 U	0.0095 U	NA	0.0854 J	0.0075 U	NA	0.0055 U	0.0015 U		
Heptachlor	ug/kg	0.00825 U	0.0128 U	NA	0.293 U	0.11 U	NA	0.00687 U	0.0025 U		
Heptachlor epoxide	ug/kg	0.0666 J	0.071 J	-6	0.154 J	0.312 J	-68	0.159 J	0.11 J		
Methoxychlor	ug/kg	0.0184 U	0.0463 U	NA	0.35 U	0.0437 U	NA	0.014 U	0.0545 U		
SVOCs											
Hexachlorobenzene	ug/kg	1.07	0.613	54	0.849	1.66	-65	0.469	0.767		
Hexachlorobutadiene	ug/kg	0.0302 U	0.0412 J	NA	0.16 U	0.179 U	NA	0.0308 U	0.00589 U		